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ENGINEERING ASSISTANT CAREER LADDER AFS 553X0(U) AIR  
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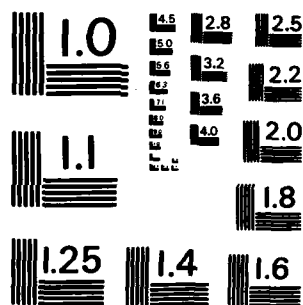
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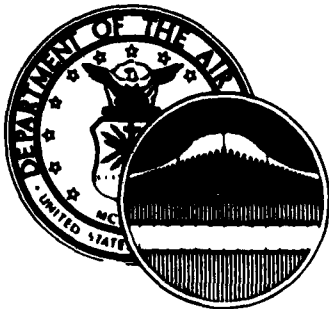
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# OCCUPATIONAL SURVEY REPORT

ENGINEERING ASSISTANT CAREER LADDER

AFS 553X0

AFPT 90-553-463

DECEMBER 1983

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OCCUPATIONAL ANALYSIS PROGRAM  
USAF OCCUPATIONAL MEASUREMENT CENTER  
AIR TRAINING COMMAND  
RANDOLPH AFB, TEXAS 78150

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HQ ATC/DPAE	1	1		1
HQ ATC/TTQC	1	1		1
HQ MAC/DPAT	3	3		3
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HQ PACAF/DPAT	3	3		3
HQ SAC/DPAT	3	3		3
HQ SAC/LGMQ (ATCLO)	1	1		1
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## PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Engineering Assistant career ladder (AFS 553X0). The project was directed by USAF Program Technical Training, Volume Two, dated June 1981. Computer printouts from which this report was produced are available for use by operating and training officials.

The survey instrument was developed by Captain Paul C. Thatcher, Inventory Development Specialist, with computer programming support furnished by Mr. Bill Feltner and Ms. Vera Frechel. Mr. Robert L. Alton, Occupational Survey Analyst, analyzed the data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Jimmy L. Mitchell, Chief, Airman Career Ladders Analysis Section, Occupational Analysis Branch, USAF Occupational Measurement Center, Randolph AFB, Texas 78150.

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel (see DISTRIBUTION on page i). Additional copies are available upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Analysis Branch (OMY), Randolph AFB, Texas 78150.

This report has been reviewed and is approved.

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USAF Occupational Measurement  
Center

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## SUMMARY OF RESULTS

1. Survey Coverage: The Engineering Assistant career ladder was surveyed to obtain current data for use in training management decisions. Survey results are based on responses from 972 members (81 percent of all assigned 553X0 career ladder personnel), with all using major commands well represented in the survey sample.
2. Specialty Jobs (Career Ladder Structure): Three clusters and four independent job types were identified in the analysis. Two clusters and all of the independent job types were involved in the performance of the various technical duties of the career ladder (80 percent of the survey sample). The third cluster was oriented toward supervisory, managerial, and training activities.
3. Career Ladder Progression: The 3- and 5-skill level jobs were highly technical, with very little responsibility for supervision or management. Seven-skill level members, although reporting activities in the supervisory and managerial functions, were still performing a job that was very technically oriented and somewhat diverse. Nine-skill level and CEM code personnel were also still somewhat involved in the performance of technical tasks.
4. AFR 39-1 Specialty Descriptions: The specialty descriptions generally reflect the technical nature of the respective jobs. Some adjustments are suggested which would improve the overall accuracy of the descriptions.
5. Training Analysis: The STS is generally well supported by survey data. One paragraph pertaining to construction material tests requires review as to the apparently excessive scope of coverage. The POI, with one minor exception, is strongly supported by survey data.
6. Special Analysis: Construction Contract Inspectors: Comparisons were made between 5-skill level and 7-skill level member groups who perform construction contract inspections and, although performing essentially the same job, significant differences were found between the groups in experience levels and job specific training received.
7. Implications: Apparently excessive coverage of construction material testing in the STS requires review, and an in-depth evaluation should be done regarding the necessity for and the best method of using 5-skill level airmen in contract management functions jobs.

OCCUPATIONAL SURVEY REPORT  
ENGINEERING ASSISTANT CAREER LADDER  
(AFS 553X0)

INTRODUCTION

This is a report of an occupational survey of the Engineering Assistant career ladder (AFS 553X0), completed by the Occupational Analysis Branch, USAF Occupational Measurement Center, in October 1983. The survey was requested by Headquarters, Air Training Command (TTQJ) to obtain current task and equipment data for use in evaluation of the effectiveness of the present training program. Previous survey results for this career ladder (then identified as Site Development) were published in June 1976.

Background

AFS 553X0 was assigned to the Site Development career ladder when it was established in September 1964. CEM Code 55300 was assigned to the career ladder in October 1978. The specialty experienced no additional significant changes until it was retitled Engineering Assistant in April 1981.

As described in AFR 39-1 specialty descriptions, personnel in this ladder are responsible for performing construction materials tests, plane surveying, preparing engineering drawings, assisting professional engineers on project designs, assisting in construction contract inspections or evaluations, and performing other general engineering tasks. Primary entry into the career ladder is from Basic Military Training School (BMTS) through a Category A 11-week formal training course conducted at Sheppard AFB, Texas, and requires an Armed Forces Vocational Aptitude Battery (ASVAB) General score of 50 for entry into the field.

Major topics discussed in this report include: (1) survey methodology; (2) comparison of specialty jobs (career ladder structure) and other survey data with career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS); (3) analyses of Total Active Federal Military Service (TAFMS) groups and Duty Air Force Specialty Code (DAFSC) groups; (4) analyses of major command (MAJCOM) groups; (5) analyses of Continental United States (CONUS) versus overseas groups; (6) a comparison of 5-skill level and 7-skill level Construction Contract Inspectors; and (7) comparison of current survey data with previous survey data.

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## SURVEY METHODOLOGY

### Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory AFPT 90-553-463, dated May 1982. A tentative task list was prepared after reviewing pertinent career ladder publications and directives, tasks from the previous survey instrument, and data from the last occupational survey report (OSR). The task list was then evaluated in the field through personal interviews with 19 subject-matter specialists from four bases. The resulting job inventory contained a comprehensive listing of 363 tasks grouped under 12 duty headings and a background section containing such information as grade, duty title, time in service, job satisfaction, and the types of equipment used.

### Survey Administration

From June through September 1982, Consolidated Base Personnel Offices (CBPOs) in operational units worldwide administered the inventory to job incumbents holding DAFSC 553X0. These job incumbents were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Human Resources Laboratory (AFHRL).

Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in their current job. After checking all tasks performed, each member then rated each of these tasks on a 9-point scale showing relative time spent on that task, as compared to all other tasks checked. The ratings ranged from one (very small amount time spent) through five (about average time spent) to nine (very large amount time spent).

To determine relative time spent for each task checked by a respondent, all of an incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is then divided by the total task ratings and multiplied by 100 to provide a relative percentage of time for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percent time spent.

### Survey Sample

Personnel were selected to participate in this survey so as to ensure an accurate representation across major commands (MAJCOM) and paygrade groups. All eligible DAFSC 553X0 personnel were mailed survey booklets. Table 1 reflects the percentage distribution, by major command, of assigned personnel in the career ladder as of March 1982. Also listed in this table is the percent distribution, by major command, of respondents in the final survey sample. The 972 respondents included in the final sample represent 81 percent of the total assigned 553X0 personnel. Table 2 reflects the paygrade group distribution, while Table 3 lists the sample distribution by TAFMS groups. As reflected in these tables, the survey sample is an excellent representation of the career ladder population.

TABLE 1

COMMAND REPRESENTATION OF SURVEY SAMPLE

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED*</u>	<u>PERCENT OF SAMPLE</u>
SAC	23	23
TAC	20	21
MAC	12	13
USAFE	10	10
PACAF	7	6
ATC	6	6
AFSC	6	5
AFLC	6	7
AAC	4	4
OTHER	<u>6</u>	<u>5</u>
TOTAL	100	100

TOTAL ASSIGNED - 1,197

TOTAL ELIGIBLE FOR SURVEY - 1,093\*\*

TOTAL IN SAMPLE - 972

PERCENT OF ASSIGNED IN SAMPLE - 81%

PERCENT OF ELIGIBLE IN SAMPLE - 89%

\* MANNING FIGURES AS OF MARCH 1982

\*\* EXCLUDES PERSONNEL IN PCS STATUS, HOSPITAL, OR LESS THAN SIX WEEKS  
ON THE JOB

TABLE 2  
PAYGRADE DISTRIBUTION OF SURVEY SAMPLE

<u>PAYGRADE</u>	<u>PERCENT OF ASSIGNED*</u>	<u>PERCENT OF SAMPLE</u>
AIRMAN	29	31
E-4	19	17
E-5	24	25
E-6	14	14
E-7	10	9
E-8	3	3
E-9	1	1

\* MANNING FIGURES AS OF MARCH 1982

TABLE 3  
TAFMS DISTRIBUTION OF SURVEY SAMPLE

<u>TAFMS (MONTHS)</u>	<u>NUMBER IN SAMPLE</u>	<u>PERCENT OF SAMPLE</u>
1-48	385	40%
49-96	217	22%
97-144	110	11%
145-192	122	13%
193-240	100	10%
241+	38	4%

### Task Factor Administration

In addition to completing the job inventory, selected senior 553X0 personnel also completed a second booklet for either training emphasis (TE) or task difficulty (TD). The TE and TD booklets were processed separately from the job inventories. The information is used in a number of different analyses discussed in more detail within the report.

Task Difficulty. Each individual completing a task difficulty booklet was asked to rate all of the tasks on a 9-point scale (from extremely low to extremely high) as to the relative difficulty of each task in the inventory. Difficulty is defined as the length of time required by the average member to learn to do the task. Task difficulty data were independently collected from 51 experienced 7- and 9-skill level personnel, stationed worldwide (see Table 4). While SAC seems to be underrepresented in overall percentages, there is a good distribution of SAC raters across the command and interrater agreement is not adversely affected. The interrater reliability (as assessed through components of variance of standard group means) of .94 for these 553X0 raters suggests a high agreement among raters. Ratings were adjusted so tasks of average difficulty have ratings of 5.00. The resulting data are essentially a rank ordering of tasks indicating the degree of difficulty for each task in the inventory.

Job Difficulty Index (JDI). After computing a task difficulty rating for each task item, it is possible to also compute a Job Difficulty Index (JDI) for the job groups identified in the survey analysis. This index provides a relative measure of which jobs, when compared to other jobs identified, are more or less difficult. The number of tasks performed and the average difficulty per unit time spent (ADPUTS) are used as variables in an equation that calculates the JDI index. The index ranges from 1.0 for very easy jobs to 25.0 for very difficult jobs. The indices are adjusted so the average job difficulty index is 13.00. Thus, the more time a group spends on difficult tasks, and the more tasks they perform, the higher their job difficulty index.

Training Emphasis. Individuals completing training emphasis booklets were asked to rate tasks on a 10-point scale (from no training required to extremely heavy training required). Training emphasis is a rating of which tasks require structured training for first-term personnel. Structured training is defined as training provided at resident technical schools, field training detachments (FTD), mobile training teams (MTT), formal OJT, or any other organized training method. Training emphasis data were independently collected from 51 experienced 7-skill level personnel stationed worldwide (see Table 4). The interrater reliability (as assessed through components of variance of standard group means) for these raters was very high (.96), indicating that there was very high agreement among raters as to which tasks required some form of structured training and which did not. In this specialty, tasks rated high in training emphasis have ratings of 4.23 and above, with an average training emphasis of 2.46.

Along with the ratings on tasks, the same group of raters (plus one additional NCO) was asked to rate the training emphasis required on equipment, types of surveys, types of engineering and architectural plans, and mathematical tables. The interrater reliability for the raters on these items

was also extremely high (.98), indicating that there was a very high agreement among raters as to which items required some form of structured training for first-term personnel. Items rated high in training emphasis have ratings of 4.48 and above, with an average training emphasis of 2.19.

When used in conjunction with other factors, such as percent members performing, the task difficulty and training emphasis ratings can provide an insight into training requirements. This may help validate the lengthening or shortening of specific units of instruction in various training programs.

TABLE 4

COMMAND DISTRIBUTION OF TASK DIFFICULTY AND TRAINING EMPHASIS RATERS

<u>COMMAND</u>	<u>PERCENT OF ASSIGNED</u>	<u>PERCENT OF TASK DIFFICULTY RATERS</u>	<u>PERCENT OF TRAINING EMPHASIS RATERS</u>
SAC	23	12	29
TAC	20	25	18
MAC	12	14	10
USAFE	10	12	10
PACAF	7	6	10
ATC	6	6	6
AFSC	6	8	6
AFLC	6	4	6
AAC	4	8	4
OTHER	<u>6</u>	<u>5</u>	<u>1</u>
TOTAL	100	100	100

## SPECIALTY JOBS (Career Ladder Structure)

A key aspect of the USAF occupational analysis program is to examine the functional structure of the career ladder. The tasks performed by career ladder personnel are examined and job groups are formed based on the similarity of task performance. This structure, as defined by tasks performed, is then compared to the organization defined by official career ladder documents. This analysis of actual jobs performed is made possible by the use of the Comprehensive Occupational Data Analysis Program (CODAP). This job information is used to examine the accuracy and completeness of career ladder documents (AFR 39-1 Specialty Descriptions and Specialty Training Standards) and to formulate an understanding of current utilization patterns.

Each person in the survey sample performs a set of tasks called a Job. A group of personnel who perform many tasks in common, and spend similar amounts of time performing those tasks is called a Job Type. Job types having a substantial degree of similarity are grouped and called a Cluster. Those specialized job types too dissimilar to fit within a cluster are labeled Independent Job Types.

### Overview of Specialty Jobs

Structure analysis identified three clusters and four independent job types within the survey sample. Based on task similarity and relative time spent, the best division of jobs performed by 553X0 personnel is illustrated in Figure 1. These clusters, job types, and independent job types are listed below. The group (GRP) number shown beside each title is a reference to computer printed information. The letter N stands for the number of personnel in the group.\*

- I. ENGINEERING SECTION PERSONNEL CLUSTER (GRP038, N=464)
  - A. Surveying and Drafting Specialists (GRP173, N=108)
  - B. Supervisory Draftsmen (GRP108, N=26)
  - C. First Job Surveyors (GRP090, N=6)
  - D. Master Plan Developers (GRP122, N=6)

\* Job groups identified within the cluster which are representative of the cluster as a whole are not singled out and listed separately. Those job types which vary somewhat from the cluster itself are listed separately. Thus, the number of personnel in the identified subgroups will not equal the cluster number as a whole.

- II. ENGINEERING SUPERVISORS AND INSTRUCTORS (GRP036, N=143)
  - A. NCOICs and Section Chiefs (GRP149, N=33)
  - B. Supervisory Surveyors (GRP103, N=17)
  - C. Technical School Instructors (GRP222, N=8)
- III. GROUND RADAR EVALUATORS (GRP166, N=12)
- IV. RESOURCES AND REQUIREMENTS PLANNERS (GRP089, N=6)
- V. ENVIRONMENTAL AND CONTRACT PLANNERS (GRP059, N=6)
- VI. CONTRACT MANAGEMENT PERSONNEL CLUSTER (GRP010, N=279)
  - A. Construction Contract Inspectors (GRP100, N=178)
  - B. Contract Management Supervisors (GRP109, N=34)
  - C. Construction Contract Liaison Personnel (GRP078, N=6)
  - D. Service Contract Inspectors (GRP074, N=23)
- VII. MATERIALS TESTING TECHNICIANS (GRP102, N=12)

Ninety-five percent of the respondents in the sample perform the jobs listed above. The remaining five percent were performing tasks or series of tasks that did not group with any of the defined job types. Some of the job titles given by respondents, which were representative of these personnel, included Energy Conservation Monitor, Facility Manager, and CECORS Monitor.

#### Group Descriptions

The following paragraphs contain brief job descriptions of the clusters, job types, and independent job types identified through the career ladder structure analysis. Selected background and job satisfaction data are provided for these groups in Tables 5 and 6. Representative tasks for all the above groups are contained in Appendix A.

I. ENGINEERING SECTION PERSONNEL CLUSTER (GRP038). Comprised of four different job types and representing the largest group in the career ladder structure (464 members and 48 percent of the total survey sample), cluster personnel performed tasks pertaining to the drawing of various types of engineering and architectural plans and accomplishing a variety of different types of surveys. Group members spend almost one-half (47 percent) of their relative job time performing tasks related to the drafting function, and over 25 percent of their relative job time is devoted to surveying activities. Engineering Section personnel specializing as Draftsmen (and to a limited extent Surveyors) represent one of the two major functions

of the career ladder and of this cluster. The scope of the job ranges from reproducing drawings on reproduction machines and setting tripods to drawing topographic maps using survey data. Typical tasks performed include:

- maintaining drawing files
- drawing engineering sketches
- updating as-builts
- lettering drawings using mechanical lettering sets or Gothic-architect style free hand
- measuring distances using tapes
- measuring stadia distances
- recording field notes using standard surveying procedures

Sixty-six percent of these respondents are in their first enlistment (highest percentage of any cluster or independent job type in the survey sample), and, with an average of only 30 months in the career field, reflect the lowest experience level of any cluster or independent job group in the specialty job grouping. With an average grade of E-4, the cluster is dominated by 5- and 3-skill level personnel (58 percent and 33 percent, respectively). This cluster includes some identifiable groups which were so similar in content to the overall cluster description that separate discussion would be repetitive. Jobs which did vary somewhat but which are still similar enough to be components of the cluster are described below.

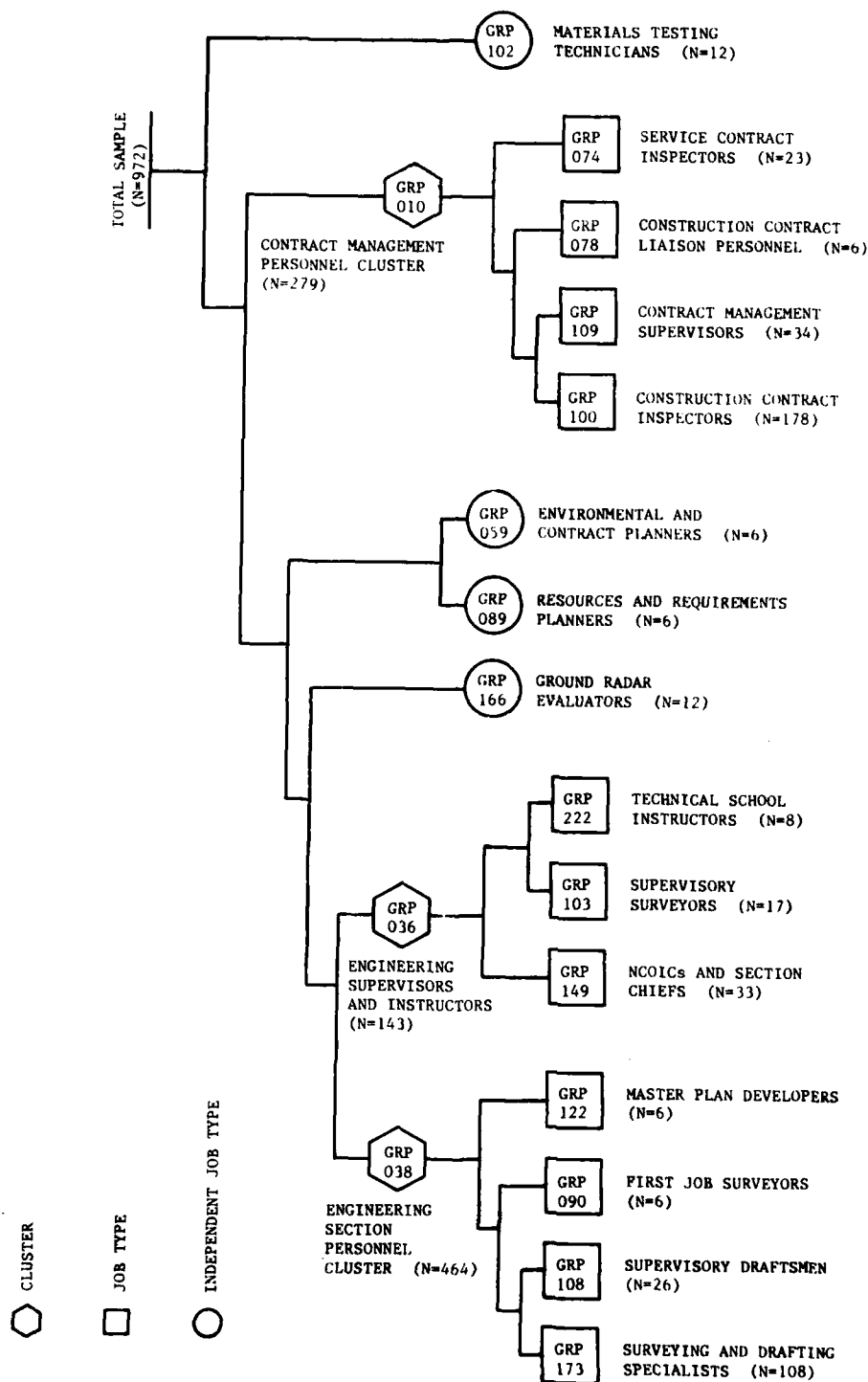
A. Surveying and Drafting Specialists (GRP173). Representing 11 percent of the survey sample, the 108 airmen in this group perform a job that differs from others in the cluster because of the higher percentage of their time spent on the tasks pertaining to surveying functions, particularly the more difficult and complex survey tasks. Although these airmen spend over one third of their relative job time performing surveying tasks, they are also still heavily involved with the wide range of drafting responsibilities of the career ladder. Tasks which differentiate these airmen from others in the cluster include:

- establishing horizontal control by traversing
- adjusting level circuit data
- computing azimuths and bearings
- computing level circuit data

Performing an average of 62 tasks (highest in the cluster), 72 percent of this group hold the 5-skill level. One subgroup identified was composed of personnel who reported assignments to Rapid Engineer Deployable Heavy Operations Repair Squadron, Engineer (RED HORSE) units.



FIGURE 1  
553X0 CAREER LADDER STRUCTURE



B. Supervisory Draftsmen (GRP108). Although the majority of this group identifies themselves as Draftsmen, supervising other personnel is a significant part of the job of these airmen. Averaging over six years in the service, 62 percent of the 26 members hold the 5-skill level with 23 percent reporting a 7-skill level DAFSC. While the job clearly has supervisory responsibilities, 52 percent of their relative job time is spent on technical tasks pertaining to drafting and surveying along with the administrative tasks associated with those functions. Along with the drafting and surveying tasks common to the cluster, these airmen performed basic supervisory and managerial tasks such as:

- interpreting engineering plans for subordinates
- supervising Apprentice Engineering Assistant Specialists (AFSC 55330)
- conducting OJT
- preparing APRs

C. First Job Surveyors (GRP090). This small job group (six members) consists entirely of first-term airmen (67 percent report less than 24 months in the career field, with 50 percent still holding a 3-skill level DAFSC). These airmen devote over two thirds of their relative job time to the performance of tasks relating to surveying activities. The group performs a very limited job (an average of only 24 tasks--lowest in this cluster and next to the lowest of all job groups identified), with 13 tasks occupying 50 percent of their overall job time. The limited number of tasks and the relatively low task difficulty ratings for the majority of the predominant tasks performed result in the lowest job difficulty index (JDI=9.23) of any job type in all the career ladder structure groups. Typical tasks include:

- cleaning and lubricating surveying equipment
- assembling or disassembling survey instruments
- prolonging a straight line
- setting tripods

With an average grade of E-3, 16 months average time in the career ladder, and 18 months average time in the service, personnel forming this group are the least experienced of all groups identified in this analysis.

D. Master Plan Developers (GRP122). Working primarily with installation master plans, three of the six members of this job group are assigned at the major command level and four of the six are stationed at overseas locations. With an average grade of E-6 and an average of almost seven years in the career field, these predominantly 7-skill level airmen (67 percent) are the most experienced group in the cluster. Updating and revising master plans involves performance of tasks such as:

- preparing or reviewing development maps
- coordinating proposed military construction master plans with using organizations
- planning layout of facilities
- preparing written evaluations of base master plans

II. ENGINEERING SUPERVISORS AND INSTRUCTORS (GRP036). This cluster of 143 people (15 percent of the survey sample) is comprised of 3 separate job groups. While they still perform a substantial number of tasks pertaining primarily to the technical functions of drafting and surveying, 79 percent report that they are supervising personnel (an average of 5 people) and 50 percent of their relative job time is devoted to supervision, management, training, and administrative duties and tasks. Common cluster tasks performed by members of this group include:

- determining work priorities
- interpreting engineering plans for subordinates
- preparing APRs
- maintaining drawing files
- conducting OJT
- measuring vertical angles
- computing level circuit data

The combination of technical and supervisory responsibilities results in personnel of this cluster performing among the highest average number of tasks of all groups in the career ladder structure and also results in next to the highest JDI (18.28) of all identified groups.

A. NCOICs and Section Chiefs (GRP149). Spending 78 percent of their relative job time performing tasks pertaining to supervisory, managerial, training, and administrative functions, this group of 33 NCOs all report supervisory responsibilities. The second most senior group in the career ladder structure (an average of 190 months in the service), 70 percent hold the 7-skill level DAFSC while 21 percent report DAFSC 55390 or CEM Code 55300. Representative of the average 73 tasks performed are:

- indorsing airman performance reports (APR)
- initiating personnel action requests
- preparing or evaluating job descriptions
- supervising Engineering Assistant Technicians (AFSC 55370)

B. Supervisory Surveyors (GRP103). The 17 airmen forming this job type group differ from others in the career ladder structure because the majority of their relative job time is spent performing tasks involving surveying activities. Although the job is dominated by technical task performance, 24 percent of their relative job time is devoted to supervisory, managerial, and training tasks. This group is also one of the few identified that spends any notable amount of their job time on the materials testing function (6 percent). Averaging over 6 years experience in the career field, 65 percent of the incumbents hold a 5-skill level DAFSC, with 35 percent indicating they are assigned to RED HORSE units.

C. Technical School Instructors (GRP222). Respondents in this group of eight airmen are all assigned to Sheppard Technical Training Center. With an average of over five years in the career field, they are assigned as Instructors and perform typical training tasks such as:

- conducting resident course classroom training
- administering and scoring tests
- evaluating progress of resident course students

One unique feature of this group is that, although assigned as Instructors, they are also periodically involved in on-base projects outside the classroom which utilize their surveying skills and keep them current on changes in the career field. This activity may enhance their ability as Instructors and is a situation seldom seen in most career ladder studies.

III. GROUND RADAR EVALUATORS (GRP166). Although this unique independent job group of 12 airmen spent 36 percent of their relative job time performing tasks pertaining to routine surveyor and drafting functions (i.e., measuring distances using tapes, computing horizontal or vertical distances, and lettering drawings), they are distinguished from other groups in the career ladder structure by the performance of tasks relating to ground radar evaluation functions (including activities such as antenna orientation or alignment). Some of the specialized tasks performed by these airmen are:

- collecting physical radar site data
- constructing movable radar coverage indicators
- drawing lobing graphs
- calculating magnetic declinations

Although dominated by more senior personnel (average time in the career field is 59 months), 42 percent of these airmen are still in their first enlistment, with 75 percent holding the 5-skill level. While they are assigned to CONUS bases, TDY is common, including trips to overseas locations in USAF and PACAF.

IV. RESOURCES AND REQUIREMENTS PLANNERS (GRP089). The six airmen in this group indicate they are primarily involved with administrative functions, with 45 percent of their relative job time devoted to tasks involving working with forms (such as work orders, property maintenance requests, and material and equipment lists), as well as cost estimation and analysis. Drafting activities remain a significant part of their responsibilities, too, with 21 percent of their relative job time spent on tasks dealing with blueprints and drawings. Tasks which help to illustrate the planning nature of their work include:

- preparing bills of materials
- reviewing supply catalogues or commercial pricing guides
- preparing final cost estimates
- making entries on AF Forms 327 (Base Civil Engineer (BCE) Work Order)
- making entries on AF Forms 1879 (BCE Job Order Record)
- drawing engineering sketches

With a higher experience level (an average of over five years in the career ladder) than most other nonsupervisory groups involved in any drafting activities, these airmen report an average grade between E-4 and E-5, and are all 5- or 7-skill level personnel (67 percent and 33 percent, respectively).

V. ENVIRONMENTAL AND CONTRACT PLANNERS (GRP059). Equally divided between overseas and CONUS locations, these six NCOs perform a job similar in some respects to the group just discussed. More senior (average grade is E-6) and more experienced (averaging seven years in the career ladder, with 50 percent indicating 7-skill level DAFSCs or CEM Code 55300), these incumbents spend more of their job time performing tasks related to coordinating, programming, cost analysis, and administrative reviews. With an average of 34 tasks performed, over 50 percent of their relative work time is spent on only 17 tasks. Tasks descriptive of the group are:

- preparing status or progress reports
- organizing data for computer inputs
- comparing actual cost estimates with programmed cost estimates
- preparing development maps
- coordinating cost estimates with programming personnel

VI. CONTRACT MANAGEMENT PERSONNEL CLUSTER (GRP010). In distinct contrast to the previously discussed ENGINEERING SECTION PERSONNEL CLUSTER, the 279 members of this group perform very few tasks pertaining to drafting or surveying, but spend 70 percent of their overall relative job time performing tasks relating to various contract management duties and the completion and evaluations of forms and reports associated with

them. Comprised of four different job types, and accounting for 29 percent of the total sample, the majority of incumbents in this cluster are 7- and 9-skill level personnel (58 percent) with 37 percent reporting a 55350 DAFSC. Tasks performed in common by most groups in the cluster include:

- preparing contract folders
- maintaining daily inspection records
- conducting acceptance inspections
- identifying contractor performance discrepancies
- maintaining records of contract changes

With an average grade of E-5, personnel in this cluster average seven years experience in the career ladder, with only 16 percent indicating they are serving in their first-enlistment (as contrasted to 66 percent of the members of the ENGINEERING SECTION PERSONNEL CLUSTER). Distinctive job types in the cluster are described below.

A. Construction Contract Inspectors (GRP100). Representing 64 percent of this cluster and 18 percent of the total sample, the 178 respondents in this group spend the majority of their relative work time (69 percent) on tasks relating to contract management and administrative functions. Although these personnel indicate they have some involvement with service contracts, the largest concentration of their time is spent on tasks peculiar to construction contracts, with 98 percent of these airmen indicating they are involved with construction contract inspections. Forty percent of the incumbents report inspecting contracts averaging in excess of \$200,000.00. Typical tasks performed by a majority of the group include:

- identifying on-site and design deficiencies
- analyzing provisions of construction contracts
- processing construction permits
- participating in constructibility reviews
- documenting construction activities

These airmen report a relatively high level of experience (an average of over six years in the career ladder, with 53 percent holding a 7-skill level DAFSC) for a nonsupervisory group and reflect an average grade of E-5. Although most of the members are performing only tasks pertaining to contract activities, one small subgroup of 10 personnel was identified as a result of activity in the drafting and surveying functions. Investigation revealed that these airmen were either assigned to small installations or were experiencing low manning problems and, thus, were required to cover all major functions of the career ladder. Contract inspection was, however, still the major feature of their job.

B. Contract Management Supervisors (GRP109). Although they perform a variety of technical contract inspection tasks (many of which are the more difficult ones), 85 percent of these 34 airmen report supervisory responsibilities and devote 55 percent of their relative job time to supervision, management, training, and administrative duties and tasks. The combination of the high average number of tasks performed (100, the highest of any group in the survey sample) and the performance of many tasks with above average task difficulty ratings results in a job which is the most difficult in the entire career ladder structure (JDI=20.61). Some tasks performed which distinguish these members from other cluster personnel include:

- counseling personnel on personal or military-related problems
- interpreting engineering plans for subordinates
- evaluating inspection reports or procedures
- preparing APRs
- performing surveillance of AAFES/NAF projects
- writing service contract specifications
- supervising Engineering Assistant Specialists and Technicians (AFSCs 55350 and 55370)

The most senior group in the entire sample (average grade of E-7), these incumbents average 16 years in the service (over 10 years in the career field), with 50 percent holding the 7-skill level DAFSC and 35 percent the 9-skill level DAFSC.

C. Construction Contract Liaison Personnel (GRP078). These six NCOs are responsible for coordination and the monitoring of construction projects involving the USAF, other government agencies (i.e., US Army Corps of Engineers), and foreign governmental agencies (such as the British Property Services Agency). With an average of 125 months in the career field (highest of any group in the survey sample), five members of the group hold DAFSC 55370 and four of the six report they are stationed overseas. Performing an average of 45 tasks, they spend 69 percent of their relative job time on tasks involving contract management, project evaluations and inspections, as well as the associated administrative procedures. Tasks differentiating these NCOs from other cluster personnel include:

- performing surveillance of projects performed by other government agencies
- making entries on DD Forms 1391 (Military Construction Project Data)
- planning layout of facilities
- making entries on DD Forms 1354 (Transfer and Acceptance of Military Real Property)

D. Service Contract Inspectors (GRP074). Similar in some respects (i.e., experience level, skill levels, and average grade) to the previously discussed Construction Contract Inspectors, this group of 23 airmen are distinguished by their concentration on tasks relating to service contract inspection and evaluation. Service contracts cover such functions as trash collection, custodial services, and garbage collection. The scope of the job is rather limited (an average of 21 tasks are performed), with only 8 tasks accounting for over 50 percent of the group's relative work time. Documenting service contract activities, analyzing provisions of service contracts, and performing Quality Assurance Evaluations (QAE) are dominant tasks performed by members of the group.

VII. MATERIALS TESTING TECHNICIANS (GRP102). This independent job type of 12 airmen has a rather unique job comprised primarily of tasks dealing with analysis and testing of construction materials (accounting for 80 percent of the group's relative job time), with very little time spent on other tasks and duties associated with the career ladder. Some of the specialized tasks performed by members of the groups are:

- analyzing soils for moisture content
- testing concrete for flexural strength
- testing bituminous materials for penetration
- classifying soils for behavior
- testing aggregate for specific gravity

Averaging almost 10 years in the career field, 58 percent of these highly experienced airmen hold the 7- or 9-skill level AFSC, and most of the respondents are assigned to the Air Force Engineering and Services Center.

#### Comparisons of Specialty Groups

Three clusters (including 11 job types that require separate descriptions) and 4 independent job types were identified in the career ladder structure analysis. Two clusters (encompassing 8 job types) and all of the independent job types were directly involved in the performance of the various technical duties of the career ladder (80 percent of the survey sample). The remaining cluster, with three job types within, was oriented toward supervisory, managerial, and training activities.

The two clusters performing the technical duties of the career ladder clearly display two major functions within the career field. The personnel performing the drafting and surveying activities have little exposure to the contract management function. While the personnel in the contract management area have occasion to perform some limited number of tasks dealing with drafting and surveying, they clearly concentrate on those tasks peculiar to contract operations. Although this may seem to indicate a need to separate the two functions into separate AFSCs or shreds, the career ladder would be



better served by remaining as it is currently established. Contract management personnel who have previously worked in the engineering section as draftsmen and surveyors bring an expertise to the new job that enhances their ability to inspect and evaluate construction contract performance. This is due to their capability to read and understand such documents as engineering drawings, sketches, and blueprints. It seems logical that this flow of knowledge and training should not be disrupted.

Difficulty of career ladder jobs were also compared using the Job Difficulty Index (JDI) described in the Task Factor Administration section of this report (average JDI = 13.00). Table 5 reveals that two of the three clusters and two of the four independent job types identified in the analysis reflect above average JDIs, with the more difficult job clusters being represented by the ENGINEERING SUPERVISORS AND INSTRUCTORS (JDI = 18.28) and the CONTRACT MANAGEMENT PERSONNEL (JDI = 15.69) clusters. The most difficult independent job types included the GROUND RADAR EVALUATORS (JDI = 15.55) and the MATERIALS TESTING TECHNICIANS (JDI = 16.49).

In addition to reviewing the functions of each job, it is also useful to compare the job groups in terms of background characteristics and job attitudes. Table 6 presents career ladder job group data pertaining to job satisfaction indicators such as expressed job interest, perceived utilization of talents and training, as well as reenlistment intentions.

Members of all the 18 groups discussed indicate that the jobs performed are interesting, with all groups showing over 60 percent of the members responding positively. Perceived utilization of talents was also high for the job groups overall, with only two groups having less than 65 percent responding positively (see highlighted figures in Table 6). Both of the low positive response groups were small, and involved very specialized functions within the career ladder.

In most of the groups identified, members indicate that the jobs performed utilized their training effectively, with 14 of the 18 groups discussed showing over 65 percent responding positively. Analysis of the composition of the jobs of the four groups, where less than 65 percent of the incumbents reported positive perceptions of training utilization (two of which also had low perceptions of utilization of talents), indicates a series of jobs which are limited in scope (i.e., Service Contract Inspectors and ENVIRONMENTAL AND CONTRACT PLANNERS) or which do not involve the major functions of the career ladder (such as Construction Contract Liaison Personnel). Although these four groups represent small numbers (a total of 36 survey sample members) and do not overshadow the overall positive nature of the career ladder response, career ladder managers and supervisors must be aware of the impact such specialization appears to have on personnel who feel that they are not getting to use their prior training effectively. Where such jobs must be done, managers should assure that some sort of job rotation program is maintained to avoid having one individual locked into such a job for too long.

Expressed reenlistment intent for the 18 groups was very high, with each group reflecting positive intent by 50 percent or more of the groups' airmen.

Review of the job inventory write-in comments from survey sample personnel supports the relatively high job satisfaction indication for the career ladder as displayed in Table 6. When there are serious problems in a career field, survey respondents are usually quite free with write-in comments to complain about perceived problems in the field. Although 32 percent (312 airmen, an unusually high number) of the survey sample used the write-in feature to convey some type of information, only seven percent of the comments (representing just one percent of the total sample) could be characterized as complaints. Many of these comments, it should be noted, mention dissatisfaction with the use of the airman's training and skills.

This analysis supports the current one-ladder classification structure. Job satisfaction question responses indicate that the individuals and training generally are well matched to the job characteristics of the career ladder and, consequently, a relatively high percentage of the airmen expressed intentions to reenlist.

TABLE 5  
SELECTED BACKGROUND DATA FOR SPECIALTY JOB GROUPS

	ENGINEERING SURVEYING SECTION AND PERSONNEL CLUSTER		SUPERVISORY DRAFTSMEN		FIRST JOB SURVEYORS		MASTER PLAN DEVELOPERS		ENGINEERING SUPERVISORS AND INSTRUCTORS		NCOICs AND SECTION CHIEFS		SUPERVISORY SURVEYORS		TECHNICAL SCHOOL INSTRUCTORS	
	NUMBER IN GROUP:	PERCENT OF SAMPLE:	NUMBER IN GROUP:	PERCENT OF SAMPLE:	NUMBER IN GROUP:	PERCENT OF SAMPLE:	NUMBER IN GROUP:	PERCENT OF SAMPLE:	NUMBER IN GROUP:	PERCENT OF SAMPLE:	NUMBER IN GROUP:	PERCENT OF SAMPLE:	NUMBER IN GROUP:	PERCENT OF SAMPLE:	NUMBER IN GROUP:	PERCENT OF SAMPLE:
DAFSC DISTRIBUTION:																
55330	464	48%	108	11%	26	3%	6	.6%	143	15%	33	3%	17	2%	8	.8%
55350	48%	81%	86%	86%	81%	81%	83%	33%	71%	71%	70%	65%	65%	100%	100%	100%
55370	33%	33%	20%	20%	15%	15%	50%	0%	5%	5%	0%	17%	17%	0%	0%	0%
55390	58%	58%	72%	72%	62%	62%	50%	33%	33%	33%	9%	65%	65%	63%	63%	63%
55300	9%	9%	7%	7%	23%	23%	0%	67%	53%	53%	70%	12%	12%	37%	37%	37%
	0%	0%	0%	0%	0%	0%	0%	0%	7%	7%	15%	6%	6%	0%	0%	0%
	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	6%	0%	0%	0%	0%	0%
AVERAGE GRADE:																
AVERAGE MONTHS IN CAREER FIELD:	E-4	30	E-4	34	E-4, E-5	48	E-3	82	E-5, E-6	81	E-6, E-7	110	E-5	78	E-4	63
AVERAGE MONTHS IN SERVICE:	47	53	53	53	81	81	18	137	141	141	190	106	106	79	79	79
PERCENT IN FIRST ENLISTMENT	66%	56%	56%	56%	27%	27%	100%	0%	8%	8%	0%	12%	12%	50%	50%	50%
PERCENT SUPERVISING:																
AVERAGE NUMBER OF TASKS PERFORMED:	11%	16%	16%	16%	64%	64%	0%	17%	79%	79%	100%	53%	53%	0%	0%	0%
JOB DIFFICULTY INDEX (JDI):	38	62	62	62	49	49	24	44	88	88	73	46	46	57	57	57
(AVERAGE JDI=13.00)	10.14	15.33	15.33	15.33	13.12	13.12	9.23	13.84	18.28	18.28	17.78	13.95	13.95	17.97	17.97	17.97

TABLE 5 (CONTINUED)

## SELECTED BACKGROUND DATA FOR SPECIALTY JOB GROUPS

GROUND RADAR EVALUATORS	RESOURCES AND REQUIREMENTS		ENVIRONMENTAL AND CONTRACT PLANNERS		CONTRACT MANAGEMENT PERSONNEL		CONSTRUCTION INSPECTORS		CONTRACT MANAGEMENT SUPERVISORS		CONSTRUCTION LIAISON PERSONNEL		SERVICE CONTRACT INSPECTORS		MATERIALS TESTING TECHNICIANS	
12	6	6	6	279	178	34	6	23								
1%	.6%	.6%	.6%	29%	18%	3%	.6%	2%								
100%	100%	100%	50%	72%	77%	56%	33%	83%								
NUMBER IN GROUP:																
PERCENT OF SAMPLE:																
PERCENT IN CONUS:																
DAFSC DISTRIBUTION:																
0%	0%	0%	0%	4%	4%	0%	0%	17%								
55330				37%	40%	12%	17%	35%								
55350	75%	67%	50%	52%	53%	50%	83%	48%								
55370	25%	33%	33%	6%	2%	35%	0%	0%								
55390	0%	0%	0%	1%	1%	3%	0%	0%								
55300	0%	0%	17%	1%	1%	3%	0%	0%								
AVERAGE GRADE:																
E-4	E-4, E-5	E-6	E-5	E-5	E-5	E-7	E-6	E-5								
59	62	84	84	77	77	122	125	73								
80	112	144	121	121	121	192	169	122								
42%	17%	17%	16%	18%	18%	6%	0%	22%								
PERCENT IN FIRST ENLISTMENT:																
PERCENT SUPERVISING:																
42%	0%	33%	24%	15%	15%	85%	50%	9%								
47	35	34	58	61	61	100	45	21								
15.55	11.02	12.04	15.69	16.66	16.66	20.61	14.87	10.14								
AVERAGE NUMBER OF TASKS PERFORMED:																
JOB DIFFICULTY INDEX (JDI):																
(AVERAGE JDI=13.00)																

TABLE 6

COMPARISONS OF JOB SATISFACTION INDICATORS BY SPECIALTY JOB GROUPS  
(PERCENT MEMBERS RESPONDING) \*

	ENGINEERING SECTION PERSONNEL CLUSTER	SURVEYING AND DRAFTING SPECIALISTS	SUPERVISORY DRAFTSMEN	FIRST JOB SURVEYORS	MASTER PLAN DEVELOPERS	ENGINEERING SUPERVISORS AND INSTRUCTORS	NCOICs AND SECTION CHIEFS	SUPERVISORY SURVEYORS	TECHNICAL SCHOOL INSTRUCTORS
EXPRESSED JOB INTEREST:									
DULL	10	7	4	0	0	4	12	0	0
SO-SO	11	7	15	17	17	4	3	0	12
INTERESTING	78	85	81	83	83	92	85	100	88
PERCEIVED USE OF TALENTS:									
LITTLE OR NOT AT ALL	21	11	11	0	17	9	15	0	12
FAIRLY WELL TO PERFECTLY	79	89	89	100	83	90	85	100	88
PERCEIVED USE OF TRAINING:									
LITTLE OR NOT AT ALL	24	16	27	33	17	9	21	18	0
FAIRLY WELL TO PERFECTLY	76	84	73	67	83	91	79	82	100
REENLISTMENT INTENTIONS:									
RETIRE	1	2	4	0	0	7	24	0	0
NO, OR PROBABLY NO	41	34	31	17	17	13	6	18	12
YES, OR PROBABLY YES	57	62	65	83	83	80	70	82	88

\* COLUMNS MAY NOT ADD TO 100 PERCENT DUE TO NON-RESPONSE OR ROUNDING

TABLE 6 (CONTINUED)  
COMPARISONS OF JOB SATISFACTION INDICATORS BY SPECIALTY JOB GROUPS  
(PERCENT MEMBERS RESPONDING) \*

	GROUND RADAR EVALUATORS	RESOURCES AND REQUIREMENTS PLANNERS	ENVIRONMENTAL AND CONTRACT PLANNERS	CONTRACT MANAGEMENT PERSONNEL CLUSTER	CONSTRUCTION CONTRACT INSPECTORS	CONTRACT MANAGEMENT SUPERVISORS	CONSTRUCTION LIAISON PERSONNEL	SERVICE CONTRACT INSPECTORS	MATERIALS TESTING TECHNICIANS
EXPRESSED JOB INTEREST:									
DULL	17	0	0	4	2	3	0	17	0
SO-SO	8	17	17	8	6	12	17	22	0
INTERESTING	75	83	83	84	89	77	83	61	92
PERCEIVED USE OF TALENTS:									
LITTLE OR NOT AT ALL	50	33	0	15	10	18	50	35	8
FAIRLY WELL TO PERFECTLY	(50)	67	100	85	90	82	(50)	65	92
PERCEIVED USE OF TRAINING:									
LITTLE OR NOT AT ALL	75	33	67	32	26	21	50	83	33
FAIRLY WELL TO PERFECTLY	(25)	67	(33)	67	73	79	(50)	(17)	67
REENLISTMENT INTENTIONS:									
RETIRE	8	17	33	12	9	27	0	4	0
NO, OR PROBABLY NO	42	17	17	17	15	12	17	31	0
YES, OR PROBABLY YES	50	66	50	70	74	59	83	65	100

\* COLUMNS MAY NOT ADD TO 100 PERCENT DUE TO NON-RESPONSE OR ROUNDING

## ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational analysis. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information is also used to evaluate how well career ladder documents, such as AFR 39-1 Specialty Descriptions and the Specialty Training Standard (STS) reflect what career ladder personnel are actually doing in the field.

A comparison of duty and task performance between DAFSCs 55330 and 55350 indicated the jobs they perform are essentially the same. Therefore, they will be discussed as one group in this report. Survey data, if desired, will also be available by each separate skill level. Similarly, DAFSC 55390 and CEM Code 55300 have also been combined for reporting purposes.

The distribution of skill-level groups across the career ladder job clusters and independent job types is displayed in Table 7, while Table 8 presents the relative percent time spent on each duty across the skill-level groups. A typical pattern of progression is present, with personnel spending more of their relative time on duties involving supervisory, managerial, and training tasks (Duties A, B, C, and D) as they moved upward to the 9-skill level and CEM Code (see Table 8). It is also obvious, though, that both the 7-skill level and the 9-level/CEM Code groups are still very involved with technical task performance, as will be pointed out in the specific skill-level group discussions below.

### Skill Level Descriptions

DAFSCs 55330/55350. Three/five-skill level personnel, representing 65 percent of the total survey sample, performed an average of 42 tasks, with 32 tasks accounting for over 50 percent of their relative job time. Performing a highly technical job, 74 percent of their relative work time is devoted to activities involving drafting, surveying, and PRIME BEEF functions, as well as the associated administrative procedures involved. While a limited amount of the group's time (10 percent) was spent on contract management duties, the majority of these airmen are involved in drafting plans (such as architectural or mechanical engineering) and performing surveys (such as topographic or construction), responding to tasks such as preparing drawings using ink; measuring distances using tapes; reading and interpreting blueprints; and recording field notes using standard surveying procedures. Table 9 provides additional tasks performed by group members and further displays their orientation toward specialization in the drafting and surveying functions of the career ladder.

DAFSC 55370. The 300 personnel at the 7-skill level performed an average of 64 tasks and were spread across various jobs. As can be seen in Table 7, only 25 percent of the group are concentrated in the obvious supervisory cluster. Only 31 percent of their relative job time is spent on supervisory, managerial, or training activities and only 46 percent of the members report having supervisory responsibilities. With 48 percent of the

7-skill level personnel in the CONTRACT MANAGEMENT PERSONNEL CLUSTER (see Table 7), 32 percent of the group's relative time is devoted to performance of tasks relating to contract management and inspections along with the administrative procedures connected with the contract function. The diversity of the group is further reflected by the fact that 21 percent of their relative job time is spent on technical tasks involving drafting and surveying (see Table 8). Table 10 presents representative tasks for the group and reflects the range of the job, with 44 percent of the members preparing APRs, while 50 percent evaluate drawings or engineering plans for constructibility.

Differences between the 3- and 5-skill level versus the 7-skill level group are displayed by the listing of tasks in Table 11. It is clear 7-skill level personnel have considerably more involvement with contract and supervisory functions than the 3-/5-skill level group does.

DAFSC 55390 and CEM Code 55300. In most career ladders, 9-skill level and CEM Code personnel are usually found to perform primarily nontechnical tasks, with the vast majority of their duty time devoted to supervision and management functions. The 39 members forming this group did not follow the typical pattern. Although 53 percent of their relative job time was spent on supervisory, managerial, and training tasks, 50 percent of the respondents were identified in the CONTRACT MANAGEMENT PERSONNEL CLUSTER (versus only 33 percent in the ENGINEERING SUPERVISORS AND INSTRUCTORS CLUSTER - see Table 7) and 24 percent of their relative duty time involved tasks pertaining to contract management duties and related administrative functions. These personnel performed an average of 79 tasks (highest of any of the DAFSC groups) with 57 tasks accounting for over 50 percent of their relative job time. Table 12 lists representative tasks which display the relatively broad range of the job performed by these NCOs.

Table 13 shows tasks which most clearly differentiate between 7- and 9-skill level and CEM Code groups. Although the 9-skill level and CEM Code group does still perform a significant number of technical career ladder tasks, it is clear those NCOs have the greatest responsibility for the supervision and management of the career ladder.

### Summary

Personnel at the 3- and 5-skill level spent practically all of their job time performing technical duties and tasks. Although 7-skill level members' activities in the supervisory and managerial functions were greater than the 3-/5-skill level group, their job was still very technically oriented and somewhat diverse. At the 9-skill level and CEM Code, there is an evident shift toward the standard supervisory and managerial role generally expected; however, substantial numbers of the group still perform a number of technically oriented tasks.



TABLE 7

NUMERICAL DISTRIBUTION OF DAFSC GROUP MEMBERS  
ACROSS CAREER LADDER CLUSTERS AND INDEPENDENT JOB TYPES\*

CAREER LADDER JOB GROUPS	DAFSC 55330 (N=178)	DAFSC 55350 (N=453)	DAFSC 55370 (N=300)	DAFSC 55390 (N=33)	CEM CODE 55300 (N=6)
I. ENGINEERING SECTION PERSONNEL CLUSTER (N=464)	151	268	43	0	0
III. GROUND RADAR EVALUATORS (N=12)	0	9	3	0	0
IV. RESOURCES AND REQUIREMENTS PLANNERS (N=6)	0	4	2	0	0
V. ENVIRONMENTAL AND CONTRACT PLANNERS (N=6)	0	3	2	0	1
VII. MATERIALS TESTING TECHNICIANS (N=12)	1	4	6	1	0
VI. CONTRACT MANAGEMENT PERSONNEL CLUSTER (N=279)	12	104	145	16	2
II. ENGINEERING SUPERVISORS AND INSTRUCTORS (N=143)	7	47	76	10	3

\* SOME GROUPS WILL NOT ADD TO TOTAL "N" DUE TO SOME DAFSC GROUP MEMBERS WORKING IN "ONE-OF-A-KIND" TYPE JOBS

TABLE 8

## AVERAGE PERCENT TIME SPENT PERFORMING DUTIES BY DAFSC GROUPS

DUTIES	DAFSC 55330/ 55350 (N=631)	DAFSC 55370 (N=300)	DAFSC 55390/ CEM CODE (N=39)
A ORGANIZING AND PLANNING	5	10	16
B DIRECTING AND IMPLEMENTING	3	8	16
C INSPECTING AND EVALUATING	3	8	15
D TRAINING	2	5	6
E PERFORMING GENERAL OR ADMINISTRATIVE FUNCTIONS	5	8	6
F PERFORMING SURVEYING FUNCTIONS	22	8	6
G PERFORMING DRAFTING FUNCTIONS	35	13	6
H PERFORMING CONTRACT MANAGEMENT DUTIES	10	27	18
I CONSTRUCTION MATERIALS TESTING	1	2	3
J PERFORMING COST ESTIMATE AND ANALYSIS FUNCTIONS	1	3	3
K PERFORMING GROUND RADAR EVALUATIONS	1	*	*
L PERFORMING PRIME BEEF PROGRAM FUNCTIONS	12	8	5
TOTAL	100	100	100

\* DENOTES LESS THAN ONE PERCENT

TABLE 9

## REPRESENTATIVE TASKS PERFORMED BY DAFSC 55330/55350 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=631)
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	80
G211 READ AND INTERPRET BLUEPRINTS	72
L329 FIRE M-16 RIFLES	72
G201 PREPARE DRAWINGS USING INK	71
G197 LETTER DRAWINGS USING MECHANICAL LETTERING SETS	71
F177 MEASURE DISTANCES USING TAPES	70
L326 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	66
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	66
G214 UPDATE AS-BUILTS	64
G198 MAINTAIN DRAWING FILES	62
F191 SET TRIPODS	61
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	53
G194 DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	51
F179 MEASURE STADIA DISTANCES	49
F187 PROLONG A STRAIGHT LINE	49
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	49
L360 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	48
G200 PERFORM REPRODUCTION MACHINE OPERATOR MAINTENANCE	47
G195 DRAW ENGINEERING SKETCHES	44
G205 PREPARE ORGANIZATIONAL CHARTS	43
F145 COMMUNICATE USING STANDARDIZED HAND SIGNALS	43
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	42

AVERAGE NUMBER OF TASKS PERFORMED - 42

TABLE 10  
REPRESENTATIVE TASKS PERFORMED BY DAFSC 55370 PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=300)
B47 WRITE CORRESPONDENCE	79
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	63
L329 FIRE M-16 RIFLES	62
L326 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	59
G211 READ AND INTERPRET BLUEPRINTS	58
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	53
C55 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR CONSTRUCTIBILITY	50
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROGRAMS	50
G213 REVIEW FINISHED DRAWINGS	49
F177 MEASURE DISTANCES USING TAPES	46
A5 DETERMINE WORK PRIORITIES	46
B40 INTERPRET ENGINEERING PLANS FOR SUBORDINATES	46
H243 IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	45
H252 PARTICIPATE IN PRE-PERFORMANCE CONFERENCES	45
C69 PREPARE APRs	44
A15 PLAN OR PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	43
C53 EVALUATE COMPLIANCE WITH WORK STANDARDS	43
H245 MAINTAIN RECORDS OF CONTRACT CHANGES	42
H220 CONDUCT ACCEPTANCE INSPECTIONS	42
E105 MAINTAIN DAILY INSPECTION RECORDS	42
H244 IDENTIFY ON-SITE AND DESIGN DEFICIENCIES	42
H226 COORDINATE CONSTRUCTION WITH CONTRACTING OFFICE	40
H232 DOCUMENT CONSTRUCTION ACTIVITIES	40
B44 SUPERVISE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55350)	40
D76 CONDUCT OJT	39
H247 MAKE ENTRIES ON AF FORMs 1477 (CONSTRUCTION INSPECTION RECORD)	37
H216 ANALYZE PROVISIONS OF CONSTRUCTION CONTRACTS	36

AVERAGE NUMBER OF TASKS PERFORMED - 64

TABLE 11

TASKS WHICH BEST DIFFERENTIATE  
BETWEEN 3-/5-SKILL AND 7-SKILL LEVEL PERSONNEL  
(PERCENT MEMBERS PERFORMING)

TASKS		DAFSC 55330/50 (N=631)	DAFSC 55370 (N=300)	DIFFERENCE
B47	WRITE CORRESPONDENCE	25	79	+54
C55	EVALUATE DRAWINGS OR ENGINEERING PLANS FOR CONSTRUCTIBILITY	15	50	+35
C54	EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	28	63	+35
B28	COUNSEL PERSONNEL ON PERSONAL OR MILITARY- RELATED PROBLEMS	15	50	+35
C69	PREPARE AIRMAN PERFORMANCE REPORTS (APR)	12	44	+32
H244	IDENTIFY ON-SITE AND DESIGN DEFICIENCIES	13	42	+29
H243	IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	16	45	+29
H220	CONDUCT ACCEPTANCE INSPECTIONS	14	42	+28
E105	MAINTAIN DAILY INSPECTION RECORDS	15	42	+27
H232	DOCUMENT CONSTRUCTION ACTIVITIES	15	40	+25
.	.	.	.	.
.	.	.	.	.
G201	PREPARE DRAWINGS USING INK	71	35	-36
G197	LETTER DRAWINGS USING MECHANICAL LETTERING SETS	71	38	-33
F191	SET TRIPODS	61	28	-33
G214	UPDATE AS-BUILTS	64	33	-31
G196	LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	66	36	-30
G198	MAINTAIN DRAWING FILES	62	34	-28
F188	RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	53	28	-25
F179	MEASURE STADIA DISTANCES	49	24	-25
F177	MEASURE DISTANCES USING TAPES	70	46	-24
G194	DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	51	29	-22

AVERAGE NUMBER OF TASKS PERFORMED BY 55330/50 PERSONNEL - 42  
AVERAGE NUMBER OF TASKS PERFORMED BY 55370 PERSONNEL - 64

TABLE 12

## REPRESENTATIVE TASKS PERFORMED BY DAFSC 55390/CEM CODE PERSONNEL

TASKS	PERCENT MEMBERS PERFORMING (N=39)
B47 WRITE CORRESPONDENCE	95
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	85
A18 PLAN WORK ASSIGNMENTS	74
A26 SCHEDULE LEAVES OR PASSES	74
B41 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	72
A10 ESTABLISH ORGANIZATIONAL POLICIES, OFFICE INSTRUCTIONS, OR STANDING OPERATING PROCEDURES	72
C69 PREPARE AIRMAN PERFORMANCE REPORTS (APR)	72
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	72
A4 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	72
B46 SUPERVISE ENGINEERING ASSISTANT TECHNICIANS (AFSC 55370)	69
A5 DETERMINE WORK PRIORITIES	67
A7 DEVELOP WORK METHODS OR PROCEDURES	67
C67 INDORSE APRs	67
C48 ANALYZE WORKLOAD REQUIREMENTS	67
G211 READ AND INTERPRET BLUEPRINTS	64
C55 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR CONSTRUCTIBILITY	64
L329 FIRE M-16 RIFLES	64
C57 EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	64
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	62
B44 SUPERVISE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55350)	59
A11 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	59
C70 SELECT INDIVIDUALS FOR SPECIALIZED TRAINING	56
A14 PLAN OR PREPARE BRIEFINGS	54
D76 CONDUCT OJT	46
H250 PARTICIPATE IN CONSTRUCTIBILITY REVIEWS	44
G195 DRAW ENGINEERING SKETCHES	39
H227 COORDINATE CONSTRUCTION WITH USING AGENCY	39
H232 DOCUMENT CONSTRUCTION ACTIVITIES	36
H243 IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	33

AVERAGE NUMBER OF TASKS PERFORMED - 79

TABLE 13

TASKS WHICH BEST DIFFERENTIATE BETWEEN  
7- AND 9-SKILL LEVEL/CEM CODE PERSONNEL  
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC	DAFSC	DIFFERENCE
	55370 (N=300)	55390/ CEM CODE 55300 (N=39)	
G201 PREPARE DRAWINGS USING INK	35	18	+17
H225 COORDINATE CONSTRUCTION WITH CONSTRUCTION MANAGER	37	21	+16
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	36	21	+15
G198 MAINTAIN DRAWING FILES	34	21	+13
F177 MEASURE DISTANCES USING TAPES	46	36	+10
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	53	44	+9
H247 MAKE ENTRIES ON AF FORMS 177 (CONSTRUCTION INSPECTION RECORD)	37	28	+9
E101 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	39	31	+8
F145 COMMUNICATE USING STANDARDIZED HAND SIGNALS	24	18	+6
.	.	.	.
.	.	.	.
.	.	.	.
B46 SUPERVISE ENGINEERING ASSISTANT TECHNICANS (AFSC 55370)	19	69	-50
C67 INDORSE AIRMAN PERFORMANCE REPORTS (APR)	22	67	-45
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	28	72	-44
A22 PREPARE OR UPDATE LOCAL OPERATING INSTRUCTIONS	22	62	-40
C48 ANALYZE WORKLOAD REQUIREMENTS	29	67	-38
A26 SCHEDULE LEAVES OR PASSES	37	74	-37
B27 CONDUCT STAFF MEETINGS	8	38	-30
C69 PREPARE APRs	44	72	-28
A14 PLAN OR PREPARE BRIEFINGS	28	54	-26

AVERAGE NUMBER OF TASKS PERFORMED BY 55370 PERSONNEL - 64

AVERAGE NUMBER OF TASKS PERFORMED BY 55390/CEM CODE 55300 - 79

## ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS

Survey data by skill level were compared to the AFR 39-1 Specialty Descriptions for the Engineering Assistant Specialist and Engineering Assistant Technician, dated 31 October 1982, and the Engineering Assistant Superintendent, dated 1 January 1982. These descriptions are intended to give a broad overview of the duties and tasks performed in each skill level of the specialty.

The 3- and 5-skill level specialty description is generally accurate, but some improvements may be possible. The overall description depicts the highly technical nature of the group's job. There is, however, one function covered in the description that warrants review. Paragraphs 1 and 2c refer to performance of tests on construction materials as being representative of the 3-/5-skill level job. Analysis of tasks performed, however, indicates this activity is a very limited part of this group's responsibility (see Table 7, ANALYSIS OF DAFSC GROUPS discussion, and Table 14 for a display of representative tasks and percentages of personnel responding). Table 15 further reflects this trend, in that survey respondents indicate very little materials testing is performed by USAF in-house resources. References to construction materials testing should be evaluated to determine if there is justification for retention in the specialty description, in light of this limited involvement. One area which is not included in this description, but which reflects considerable 3- and 5-skill level activity, is the PRIME BEEF Program (see Table 16 for a display of selected tasks and percentages of these skill level personnel responding). Including references to this function in the specialty description would more accurately reflect what an individual could expect to do if assigned to this career ladder.

The 7-skill level description accurately portrays the highly technical nature and the scope of this group's job. As was discussed in the 3-/5-skill level description analysis, consideration should be given to mentioning the PRIME BEEF Program responsibility.

The description for the 9-skill level and CEM Code personnel reflects the combination supervisory and technical nature of the job. Previous discussion regarding the PRIME BEEF Program function also applies to this job (see Table 16) and should be considered during the next review of this specialty description.



TABLE 14

DATA RELATED TO SELECTED CONSTRUCTION MATERIAL TESTING TASKS  
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 55330 (N=178)	DAFSC 55350 (N=453)	DAFSC 55370 (N=300)	DAFSC 55390/ CEM CODE (N=38)
I265 ANALYZE SOILS FOR ATTERBURG LIMITS	2	2	4	8
I266 ANALYZE SOILS FOR GRAIN-SIZE DISTRIBUTION	2	5	6	10
I267 ANALYZE SOILS FOR MOISTURE CONTENT	2	4	6	8
I268 ANALYZE SOILS FOR SPECIFIC GRAVITY	1	2	4	8
I269 CLASSIFY SOILS FOR BEHAVIOR	3	2	4	5
I270 CLASSIFY SOILS USING UNIFIED SOIL CLASSIFI- CATION SYSTEM	2	3	5	8
I271 COLLECT SOIL SAMPLES	5	7	7	18
I272 DESIGN BITUMINOUS MIXES	1	1	1	0
I273 DESIGN TRIAL CONCRETE MIXES	1	1	2	1
I274 PREPARE MATERIALS TEST REPORTS	1	2	4	8
I275 TEST AGGREGATE FOR GRADATION	1	4	7	8
I276 TEST AGGREGATE FOR ORGANIC IMPURITIES	1	1	4	0
I277 TEST AGGREGATE FOR SOUNDNESS	1	1	2	3
I278 TEST AGGREGATE FOR SPECIFIC GRAVITY	1	2	3	5
I279 TEST AGGREGATE FOR SURFACE MOISTURE	1	2	2	5
I280 TEST AGGREGATE FOR UNIT WEIGHT	1	2	4	5
I281 TEST BITUMINOUS MATERIALS FOR ASPHALT CONTENT	1	2	4	5
I282 TEST BITUMINOUS MATERIALS FOR FLASH POINT	1	1	3	2
I284 TEST BITUMINOUS MATERIALS FOR PENETRATION	1	1	3	2
I286 TEST BITUMINOUS MATERIALS FOR VISCOSITY	1	1	2	2
I289 TEST CONCRETE FOR COMPRESSIVE STRENGTH	1	6	7	10
I290 TEST CONCRETE FOR FLEXURAL STRENGTH	1	3	5	5
I291 TEST CONCRETE FOR SLUMP	1	11	18	21
I292 TEST SOILS FOR IN-PLACE DENSITY	2	2	6	8
F293 TEST SOILS FOR MOISTURE-DENSITY RELATIONSHIP	2	2	4	5
I294 TEST SOILS USING FIELD CALIFORNIA BEARING RATIO (CBR)	2	2	3	8
I295 TEST SOILS USING LABORATORY CBR	2	3	3	3
I296 TEST SOILS USING PLATE BEARING TEST	2	1	3	5

TABLE 15

DATA REGARDING WHERE SOILS AND PAVEMENT TESTS ARE  
PERFORMED IN RESPONDENTS' ORGANIZATIONS  
(PERCENT MEMBERS RESPONDING)

WHERE TESTS ARE PERFORMED	DAFSC 55330 (N=178)	DAFSC 55350 (N=453)	DAFSC 55370 (N=300)	DAFSC 55390/ CEM CODE (N=38)
AF CIVIL ENGINEERING CENTER	(5)	(4)	(4)	(8)
ARMY CORPS OF ENGINEERS	9	10	11	13
CONTRACTORS	23	26	36	33
INDEPENDENT TESTING LABORATORIES	19	22	37	39
LOCAL BASE LAB	(2)	(4)	(5)	(10)
NOT PERFORMED IN MY ORGANIZATION	39	40	38	18
OTHER	3	6	4	15

TABLE 16  
DATA RELATED TO SELECTED PRIME BEEF PROGRAM TASKS  
(PERCENT MEMBERS PERFORMING)

TASKS	DAFSC 55330 (N=178)	DAFSC 55350 (N=453)	DAFSC 55370 (N=300)	DAFSC 55390/ CEM CODE (N=38)
L324 ASSEMBLE AM-2 MATTING FOR RAPID RUNWAY REPAIRS	33	47	38	31
L328 ERECT TENTS	28	49	45	33
L329 FIRE M-16 RIFLES	64	75	62	64
L334 LAY AM-2 MATTING FOR RUNWAY OR AIRCRAFT PARKING	14	27	18	18
L342 OPERATE PORTABLE (FIELD) RADIOS	16	21	24	28
L350 PERFORM CAMP CANTONMENT CONSTRUCTION PROCEDURES	5	15	22	21
L356 PERFORM MILITARY FIELD SANITATION TECHNIQUES	6	15	20	18
L357 PRACTICE CONVOY DEFENSE TECHNIQUES FOR WORK PARTY SECURITY	10	18	23	26
L359 PRACTICE SELF-PROTECTION FROM EXTREME WEATHER	12	22	26	23
L360 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	38	52	47	46
L361 REPAIR LARGE PAVEMENT BOMB CRATERS	10	21	17	10
L362 REPAIR SMALL PAVEMENT BOMB CRATERS	8	19	17	8

## ANALYSIS OF TAFMS GROUPS

Utilization patterns for survey respondents in different Total Active Federal Military Service (TAFMS) groups were reviewed to determine if there were differences in tasks performed. As is typical in most career ladders, as time in service (and experience) increased, there was a corresponding increase in relative time spent on duties involving supervisory, managerial, and training tasks (see Table 17). As time spent in supervisory and managerial duties increased, performance time on tasks in the technical functions of drafting and surveying decreased. Time devoted to contract management function tasks, however, inclined with experience (as was seen in the ANALYSIS OF DAFSC GROUPS section), peaking during the fourth enlistment period (149-192 months), but remaining high into the sixth enlistment period (241+ months). As displayed in Table 17, the major emphasis of the job for this career ladder shifts over time from the drafting and surveying functions to the contract management function. Not until the 20-year point (241+ months) did supervisory, managerial, and administrative functions account for a majority of the respondents' time (even then, personnel were still very active in technical drafting and contract management activities).

A more in-depth, detailed evaluation of the first-enlistment group will be presented in the TRAINING ANALYSIS section of this report.

Comparisons of group perceptions of their jobs help career field managers to understand some of the factors which may affect the job performance of today's airmen. These perceptions were captured by including four job satisfaction questions covering job interest, perceived utilization of talents and training, and reenlistment intentions. Table 18 presents data displaying the responses of selected TAFMS groups. Comparisons were also made between comparative samples of other Direct Support career ladders surveyed in 1982.

Comparison of the groups reflects that all job satisfaction indicators for 553X0 first-term airmen are higher than the comparative sample group, with positive reenlistment intentions substantially so. Comparison of other TAFMS groups shows higher job satisfaction indications for the 553X0 second-enlistment group also, with the exception of training utilization, which is slightly lower than the comparative sample group. The same pattern holds true for the 553X0 career group (97+ months TAFMS). By and large, according to these responses, personnel in the 553X0 career ladder are pretty well satisfied with their jobs and the kinds of work they do. These data discussed here tend to support the judgment mentioned in the SPECIALTY JOBS section where the low percentage of write-in complaints was noted.

TABLE 17

## RELATIVE TIME SPENT ON DUTIES BY TAFMS GROUPS

DUTIES	MONTHS TAFMS					
	1-48 (N=385)	49-96 (N=217)	97-144 (N=110)	145-192 (N=122)	193-240 (N=100)	241+ (N=38)
A ORGANIZING AND PLANNING	4	5	8	10	12	14
B DIRECTING AND IMPLEMENTING	2	5	7	8	11	13
C INSPECTING AND EVALUATING	1	5	6	8	11	13
D TRAINING	1	4	4	4	6	7
E PERFORMING GENERAL OR ADMINISTRATIVE FUNCTIONS	3	7	8	8	7	8
F PERFORMING SURVEYING FUNCTIONS	26	17	12	9	7	6
G PERFORMING DRAFTING FUNCTIONS	41	24	18	12	11	7
H PERFORMING CONTRACT MANAGEMENT DUTIES	7	17	23	28	23	18
I CONSTRUCTION MATERIALS TESTING	1	2	3	2	3	2
J PERFORMING COST ESTIMATE AND ANALYSIS FUNCTIONS	1	2	1	4	3	4
K PERFORMING GROUND RADAR EVALUATIONS	1	1	1	*	*	1
L PERFORMING PRIME BEEF PROGRAM FUNCTIONS	12	11	9	7	6	7
TOTAL	100	100	100	100	100	100

\* DENOTES LESS THAN .5 PERCENT

TABLE 18

COMPARISON OF JOB SATISFACTION INDICATORS BY TAFMS GROUPS  
(PERCENT MEMBERS RESPONDING)\*

	1-48 MONTHS TAFMS		49-96 MONTHS TAFMS		97+ MONTHS TAFMS	
	553X0 (N=385)	COMPARATIVE SAMPLE** (N=2,888)	553X0 (N=217)	COMPARATIVE SAMPLE** (N=1,353)	553X0 (N=370)	COMPARATIVE SAMPLE** (N=2,080)
<u>EXPRESSED JOB INTEREST:</u>						
DULL	9	16	7	12	6	9
SO-SO	12	19	9	18	6	14
INTERESTING	77	64	82	69	86	75
<u>PERCEIVED UTILIZATION OF TALENTS:</u>						
LITTLE OR NOT AT ALL	22	27	18	23	16	17
FAIRLY WELL TO PERFECTLY	78	73	81	76	83	82
<u>PERCEIVED UTILIZATION OF TRAINING:</u>						
LITTLE OR NOT AT ALL	25	26	29	24	26	19
FAIRLY WELL TO PERFECTLY	75	73	70	76	74	80
<u>REENLISTMENT INTENTIONS:</u>						
NO, OR PROBABLY NO	47	59	30	31	7	10
YES, OR PROBABLY YES	51	39	68	66	75	71

\* COLUMNS MAY NOT ADD TO 100 PERCENT DUE TO NONRESPONSES AND ROUNDING

\*\* COMPARATIVE SAMPLE OF DIRECT SUPPORT CAREER LADDERS SURVEYED IN 1982 (INCLUDES AFSCs 231X0, 231X1, 233X0, 233X1, 472X0, 472X1A/B/C/D, 472X2, 472X3, 545X1, 551X0, AND 551X1)

## TRAINING ANALYSIS

Occupational survey data are one of the many sources of information which can be used to assist in the development of a training program relevant to the needs of personnel working in their first assignment within a career ladder. Factors which may be used in evaluating training include the overall description of the job being performed by first-enlistment personnel and their overall distribution across career ladder jobs, percentages of first-job (1-24 months TAFMS) or first-enlistment (1-48 months TAFMS) members performing specific tasks or using certain equipment or procedures, as well as training emphasis and task difficulty ratings (previously explained in the SURVEY METHODOLOGY section).

To assist specifically in the evaluation of the Specialty Training Standard (STS) and the Plan of Instruction (POI), technical school personnel from Sheppard Technical Training Center, Sheppard Air Force Base, Texas, matched job inventory tasks to appropriate sections and subsections of the STS and POI for Course 3ABR55330-001. It was this task matching upon which comparison to those documents was based. A complete computer listing displaying the percent members performing tasks, training emphasis ratings for each task and certain background items, task difficulty ratings for each task, along with STS and POI matchings, has been forwarded to the technical school for their use in further detailed reviews of training documents. Summaries of the above-mentioned data and information are given below.

### First-Enlistment Personnel

First-enlistment personnel spent the vast majority of their job time performing tasks involving the drafting and surveying functions, such as preparing drawings using ink, measuring distances using tapes, lettering drawings, and measuring vertical distances and heights. They were also involved in the PRIME BEEF Program, performing common tasks such as firing M-16 rifles and erecting tents (see Table 19 for a more comprehensive display of representative tasks). Distribution of first-term personnel across career ladder jobs is displayed in Figure 2, reflecting the fact that most first-enlistment airmen (80 percent) are involved in the drafting and surveying function of the Civil Engineering Squadron Engineering Section, with only limited numbers working in the other jobs identified during the career ladder structure analysis.

In response to requests for information by technical school personnel, data were compiled to display responses pertaining to the amount of time these airmen spent performing specific types of surveys and surveying accuracies, drafting various types of plans, and using certain mathematical tables. These data are displayed at Appendix B, Tables B1 through B5.

TABLE 19

## REPRESENTATIVE TASKS PERFORMED BY FIRST-ENLISTMENT PERSONNEL

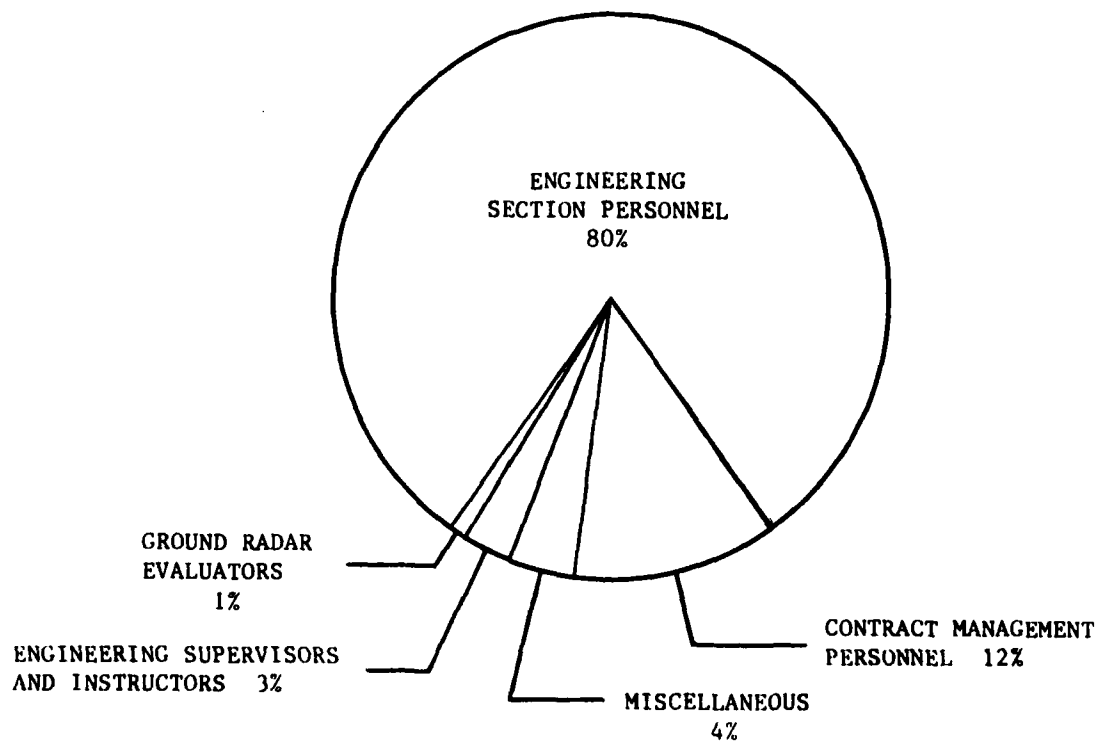
TASKS	PERCENT MEMBERS PERFORMING (N=385)
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINE	85
G197 LETTER DRAWINGS USING MECHANICAL LETTERING SETS	79
G201 PREPARE DRAWINGS USING INK	78
F177 MEASURE DISTANCES USING TAPES	76
G211 READ AND INTERPRET BLUEPRINTS	75
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT FREEHAND	74
G214 UPDATE AS-BUILTS	71
L329 FIRE M-16 RIFLES	71
G198 MAINTAIN DRAWING FILES	70
F191 SET TRIPODS	69
L326 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	64
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	57
G194 DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	55
G200 PERFORM REPRODUCTION MACHINE OPERATOR MAINTENANCE	54
F187 PROLONG A STRAIGHT LINE	54
G205 PREPARE ORGANIZATIONAL CHARTS	53
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	53
F179 MEASURE STADIA DISTANCES	52
G195 DRAW ENGINEERING SKETCHES	46
F180 MEASURE VERTICAL ANGLES	46
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	45
F145 COMMUNICATE USING STANDARDIZED HAND SIGNALS	45
F181 MEASURE VERTICAL DISTANCES OR HEIGHTS	43
F174 MARK AND SET CONSTRUCTION STAKES	43
L324 ASSEMBLE AM-2 MATTING FOR RAPID RUNWAY REPAIRS	42
G213 REVIEW FINISHED DRAWINGS	41
G209 PRODUCE INTERMEDIATE MASTERS USING SCISSOR EDITING	39
F157 COMPUTE HORIZONTAL OR VERTICAL DISTANCES	35
G203 PREPARE ILLUSTRATION DRAWINGS	31
G202 PREPARE GEOMETRICAL CONSTRUCTION DRAWINGS	31

AVERAGE NUMBER OF TASKS PERFORMED - 38



FIGURE 2

DISTRIBUTION OF FIRST ENLISTMENT PERSONNEL  
ACROSS JOB SPECIALTY GROUPS  
(PERCENT MEMBERS RESPONDING)  
N=385



### Training Emphasis

Table 20 lists the top 20 technical tasks (excluding contingency-type tasks) which the previously discussed training emphasis (TE) raters (see SURVEY METHODOLOGY section) indicated were the most important for first-enlistment training (as indicated by TE ratings). These tasks are displayed as examples to illustrate how the various types of data (percent performing, task difficulty, and training emphasis) can be used to evaluate training documents. These high TE tasks dealt primarily with surveying and drafting responsibilities and only two reflect less than 30 percent of the sample group performing them. This suggests that, on the whole, these tasks are well suited for some form of common structured training. In all, 73 of the 363 inventory tasks were rated high in TE, and technical school personnel should perform an in-depth review of the TE rating computer product furnished with the total data package.

Further review of Table 20 indicates that 18 of the 20 tasks were matched to the 3ABR55330-001 POI, indicating they are currently taught in the technical school. While there are two tasks matched to the POI which reflect less than 30 percent of the first-enlistment personnel performing, the above-average task difficulty ratings may well support their retention in the course. The two tasks not matched to the POI have a high percentage of first-term personnel performing, and should be evaluated for inclusion in resident course training.

Tables 21 through 23 list the specific job inventory background items on equipment and topics for which training emphasis ratings were also collected. (Although TE ratings by equipment, plans, and surveys are a new and still somewhat experimental type of data, they may be helpful in prioritizing what things should be trained. Note that the average and "high TE" cutoffs for these data are slightly different than task TE). These ratings, coupled with the percentage of first-term personnel responding to the background items, will assist personnel at the technical school in assuring that they are teaching the most common equipment and types of engineering plans and surveys, and will also indicate where supervisors in the field feel the relative emphasis should be placed in formal training.

TABLE 20

## TECHNICAL TASKS RATED HIGHEST IN TRAINING EMPHASIS

TASKS	TRAINING EMPHASIS	TASK DIFFICULTY	PERCENT MEMBERS PERFORMING	
			FIRST-ENLISTMENT (N=385)	TOTAL SAMPLE (N=972)
G211 READ AND INTERPRET BLUEPRINTS	7.41	5.24	75	68
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	6.94	4.58	57	44
F177 MEASURE DISTANCES USING TAPES	6.86	3.64	76	61
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	6.76	2.51	86	70
*G214 UPDATE AS-BUILTS	6.76	4.47	71	53
F174 MARK AND SET CONSTRUCTION STAKES	6.51	5.10	43	32
F179 MEASURE STADIA DISTANCES	6.49	4.33	52	41
F158 COMPUTE LEVEL CIRCUIT DATA	6.47	5.38	36	30
F157 COMPUTE HORIZONTAL OR VERTICAL DISTANCES	6.45	5.32	35	29
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	6.43	5.90	45	35
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	6.37	4.18	53	42
*G198 MAINTAIN DRAWING FILES	6.33	3.82	70	52
F181 MEASURE VERTICAL DISTANCES OR HEIGHTS	6.31	4.97	43	34
F180 MEASURE VERTICAL ANGLES	6.27	4.64	46	36
F167 ESTABLISH BUILDING CORNERS FOR NEW CONSTRUCTION SITES	6.22	5.21	23	21
F146 COMPUTE AZIMUTHS AND BEARINGS	6.12	5.50	35	27
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREEHAND	6.12	4.06	74	55
F171 ESTABLISH VERTICAL CONTROL	6.10	5.84	31	25
F187 PROLONG A STRAIGHT LINE	6.08	4.05	54	41
F161 COMPUTE TRAVERSE DATA	6.00	6.44	18	17

\* INDICATES TASKS NOT MATCHED TO POI FOR 3ABR55330-001

NOTE: AVERAGE TASK TRAINING EMPHASIS RATING IS 2.46  
TASK TRAINING EMPHASIS RATINGS OF 4.23 OR BETTER IS HIGH

TABLE 21

## EQUIPMENT RATED HIGHEST IN TRAINING EMPHASIS

EQUIPMENT	TRAINING EMPHASIS RATING	PERCENT 1ST ENL RESPONDING (N=385)
TRANSITS	6.90	77
DUMPY LEVELS	6.52	60
STEEL TAPES	6.48	80
PRECISION RODS (PHILADELPHIA ROD)	6.29	74
LETTERING SET WITH LETTERING GUIDES	6.00	81
PARALLEL RULES	5.98	67
DRAWING TABLES	5.88	91
SELF-LEVELING LEVELS	5.83	29
DRAFTING MACHINES	5.81	45
ENGINEER LEVELS	5.79	55
POCKET CALCULATORS	5.75	75
LEVEL RODS	5.73	62
DIAZO PROCESS COPYING MACHINES	5.69	86
TAPING ARROWS	5.38	73
TEMPLATES	5.19	83
RANGE POLES	5.13	71
ONE-MINUTE THEODOLITES	5.12	23
DESK CALCULATORS	4.94	62
ONE-SECOND THEODOLITES	4.92	18
STADIA RODS	4.85	33
REGULAR RAILROAD CURVE DRAFTING SETS	4.71	48
ENGINEER TRANSIT COMPASSES	4.63	53
TECHNICAL FOUNTAIN PENS	4.63	71
HAND LEVELS	4.50	42
PLANE TABLES	4.50	35

NOTE: AVERAGE EQUIPMENT AND TOPICS TRAINING EMPHASIS IS 2.19  
EQUIPMENT AND TOPICS TRAINING EMPHASIS RATING OF 4.48 OR BETTER IS HIGH

TABLE 22

## TRAINING EMPHASIS RATINGS FOR TYPES OF SURVEYS AND MATH TABLES

<u>TYPES OF SURVEYS AND MATH TABLES</u>	<u>TRAINING EMPHASIS RATING</u>	<u>PERCENT 1ST ENL RESPONDING (N=385)</u>
SURVEYS:		
TOPOGRAPHIC	6.94	70
CONSTRUCTION	6.67	64
ENGINEERING	6.42	59
BASIC CONTROL	6.17	48
LAND	5.58	46
UNDERGROUND	1.73	15
HYDROGRAPHIC	1.04	11
ASTRONOMIC	.90	10
GRAVITY	.63	11
ARTILLERY	.48	11
MATH TABLES:		
TRIGONOMETRY	5.52	49
LOG	3.65	23
SPIRAL CURVE	2.23	16
EPHEMERIS	1.33	15

NOTE: AVERAGE EQUIPMENT AND TOPICS TRAINING EMPHASIS RATING IS 2.19  
EQUIPMENT AND TOPICS TRAINING EMPHASIS RATING OF 4.48 OR BETTER IS HIGH

TABLE 23

## TRAINING EMPHASIS RATINGS FOR TYPES OF ENGINEERING/ARCHITECTURAL PLANS

TYPES OF PLANS	TRAINING EMPHASIS RATING	PERCENT 1ST ENL RESPONDING (N=385)
CIVIL ENGINEERING	7.15	76
ELECTRICAL ENGINEERING	6.73	72
MECHANICAL ENGINEERING	6.71	72
ARCHITECTURAL:		
FLOOR	7.21	79
ELEVATIONS	6.77	72
FOUNDATION	6.77	65
PLOT	6.71	65
FRAMING	6.63	58
PAVEMENT	6.63	57
PLUMBING	6.63	62
WIRING	6.62	64
AIR CONDITIONING AND VENTILATING	6.44	62
STRUCTURAL CONCRETE	6.21	51
STRUCTURAL STEEL	5.98	45
STRUCTURAL TIMBER	5.27	43

NOTE: AVERAGE EQUIPMENT AND TOPICS TRAINING EMPHASIS RATING IS 2.19  
EQUIPMENT AND TOPICS TRAINING EMPHASIS RATING OF 4.48 OR BETTER IS HIGH

### Specialty Training Standard (STS)

A comprehensive review of STS 553X0, dated September 1982, compared STS items to survey data. STS paragraphs containing general knowledge information or subject-matter knowledge requirements were not evaluated. Overall, the STS provides comprehensive coverage of the significant jobs performed by personnel in the field, with survey data supporting significant paragraphs or subparagraphs. While some tasks did not reflect high percentages of personnel performing them, high training emphasis ratings help support retention of the STS elements involving these tasks. One element of the STS, however, does require some discussion. Paragraph 7, CONSTRUCTION MATERIALS TESTS, reflects relatively low percentages of personnel performing on almost every task matched to elements and subelements of the paragraph (see Table 24 for a display of sample tasks). These very low task performance figures might raise some question about the code levels or even the retention of the paragraph in the STS. Countering this, however, was the identification of a small, highly specialized group of personnel whose primary job dealt with materials testing and analysis. Although retention of a reference to the function in the STS appears to be justified, it is suggested that subject-matter specialists and training personnel evaluate the rather high number of elements in the paragraph with a view toward reducing the detail of the coverage of the function. Due to the very low percentage of the career ladder groups performing the tasks and the limited number of locations where testing is performed by Air Force personnel (refer back to Table 15 for activities performing tests), it may be more appropriate to list broad areas in the STS and leave the more detailed entries to a local Job Qualification Standard (JQS).

Tasks not matched to any element of the STS are listed at the end of the STS computer format (see TRAINING EXTRACT, the reduced computer products included with this report). These were reviewed to determine if they were concentrated around any particular function. The matching process was very thorough, and no particular trends or subgroups of unmatched tasks were noted, with the majority being supervisory and managerial tasks.

### Plan of Instruction (POI)

Based on the previously mentioned assistance from technical school subject-matter specialists in matching inventory tasks to the 3ABR55330-001 POI, dated 4 March 1982, a computer product was generated displaying the results of that matching process. Although the 4 March 1982 POI was superceded by a version dated 1 March 1983, a comprehensive review of the new version did not reveal any apparent changes in the material taught in any of the blocks of instruction. Information furnished for consideration includes task training emphasis (TE) and task difficulty ratings, as well as percent members performing data for first-job and first-enlistment personnel.

The POI appears to thoroughly address the requirements for first-term airmen training in this career ladder. With the minor exception of one eight-hour segment of training (Block III, Unit 5, Earthwork Computation), all blocks and units of instruction dealing with performance items are strongly supported by survey data based on percentages of first-term personnel performing significant tasks or the high training emphasis or task difficulty ratings calculated for the tasks. Even the tasks pertaining to the earthwork computations unit reflected some very high training emphasis and task difficulty ratings, but none had more than 10 percent of the first-job or first-enlistment members performing them. Subject-matter specialists and training personnel should evaluate this unit of instruction to determine if retention based on task criticality (a factor implied by the high training emphasis ratings) is justified.



TABLE 24

STS PARAGRAPH REFLECTING LOW TASK PERFORMANCE

STS PARA 7	SELECTED SAMPLE TASKS	TNG EMP*	TASK DIFF**	PERCENT MEMBERS PERFORMING		
				1ST ENL (N=385)	DAFSC 55350 (N=453)	DAFSC 55370 (N=300)
CONSTRUCTION MATERIALS TESTS	I267 ANALYZE SOILS FOR MOISTURE CONTENT	1.33	5.19	2	4	6
	I269 CLASSIFY SOILS FOR BEHAVIOR	1.20	5.94	2	2	4
	I292 TEST SOILS FOR IN-PLACE DENSITY	1.20	5.54	1	2	6
	I281 TEST BITUMINOUS MATERIALS FOR ASPHALT CONTENT	1.02	5.98	1	2	4
	I284 TEST BITUMINOUS MATERIALS FOR PENETRATION	1.23	5.50	1	1	3
	I272 DESIGN BITUMINOUS MIXES	.80	7.45	1	1	1
	I275 TEST AGGREGATE FOR GRADATION	1.23	4.68	1	4	7
	I277 TEST AGGREGATE FOR SOUNDNESS	1.08	5.35	1	1	2
	I288 TEST CONCRETE FOR AIR CONTENT	1.23	5.35	1	2	5
	I290 TEST CONCRETE FOR FLEXURAL STRENGTH	1.29	5.52	1	3	5
	I289 TEST CONCRETE FOR COMPRESSIVE STRENGTH	1.53	5.40	2	6	7

\* TASK TRAINING EMPHASIS RATING OF 4.23 OR BETTER IS HIGH; TASK TRAINING EMPHASIS RATING OF 2.46 IS AVERAGE

\*\* TASK DIFFICULTY RATING OF 5.00 IS AVERAGE

## MAJCOM COMPARISONS

Tasks performed and background data for personnel of the 10 major commands (MAJCOM) with the largest 553X0 populations were compared to determine whether job content varied as a function of MAJCOM assignment.

Generally, the jobs performed across the commands were similar, with the largest percentage of duty time in each command committed to the performance of tasks involving drafting, surveying, and contract management (see Table 25). Some minor variances were noticed, with USAFE personnel reporting they spent somewhat less relative job time on tasks involving surveying activities, while PACAF and AFCC airmen indicated spending somewhat less relative job time on drafting activities.

AFCC personnel reflected the most notable variances in the overall job performed. Along with the low amount of time spent on drafting activities, they are the only group with essentially no activity in the contract management function. At the same time, AFCC personnel are the only group reporting significant amounts of time performing tasks relating to ground radar evaluation. Samples of the distinguishing ground radar tasks performed by these airmen include drawing lobing graphs and pictorial site plans, formatting data for computer input, and computing surveyed shadows and vertical angles.

### Summary

Many of the tasks pertaining to the major functions of the career ladder (drafting, surveying, and contract management) are performed commonly across all the using MAJCOMs by substantial numbers of airmen. Only AFCC stands out as clearly distinctive, due primarily, to its members' concentration of time on tasks pertaining to ground radar evaluations.

TABLE 25

## PERCENTAGE OF TIME SPENT ON DUTIES BY MAJCOM GROUPS

DUTIES	SAC (N=224)	MAC (N=124)	TAC (N=203)	USAFE (N=102)	PACAF (N=58)	AAC (N=38)	ATC (N=55)	AFLC (N=64)	AFSC (N=50)	AFCC (N=17)
A ORGANIZING AND PLANNING	6	6	5	10	8	7	6	7	6	9
B DIRECTING AND IMPLEMENTING	5	5	5	6	7	5	6	6	5	8
C INSPECTING AND EVALUATING	5	6	4	6	6	5	5	5	4	6
D TRAINING	2	2	2	3	4	3	8	3	3	9
E PERFORMING GENERAL OR ADMINISTRATIVE FUNCTIONS	7	6	5	7	6	5	5	4	8	7
F PERFORMING SURVEYING FUNCTIONS	14	20	20	10	23	23	22	20	18	21
G PERFORMING DRAFTING FUNCTIONS	31	26	30	24	15	30	25	23	27	13
H PERFORMING CONTRACT MANAGEMENT DUTIES	18	15	15	18	22	15	10	14	16	*
I CONTRUCTION MATERIAL TESTING	*	*	1	*	2	1	1	0	*	0
J PERFORMING COST ESTIMATE AND ANALYSIS FUNCTIONS	2	2	2	3	2	1	1	1	3	1
K PERFORMING GROUND RADAR EVALUATIONS	*	*	1	*	*	1	*	0	*	21
L PERFORMING PRIME BEEF PROGRAM FUNCTIONS	10	12	10	13	5	5	11	17	10	5
TOTALS	100	100	100	100	100	100	100	100	100	100

\* DENOTES LESS THAN .5 PERCENT

## ANALYSIS OF CONUS VERSUS OVERSEAS GROUPS

Comparisons were made of the tasks performed and background data for the 360 DAFSC 55350 personnel assigned to the continental United States (CONUS) versus the 88 DAFSC 55350 airmen in the sample assigned to overseas locations. Review of the tasks and duties performed by the two groups indicates no appreciable difference in the overall jobs performed. The scope of the jobs for the two groups is essentially the same also, with CONUS airmen performing an average of 46 tasks, while overseas personnel perform an average of 45 tasks. While the jobs performed are basically the same, a slightly higher proportion of CONUS airmen are involved in drafting the various types of engineering and architectural plans. Responses to other technical job background items, such as equipment used, reflected very similar responses.

Comparison of other general background data revealed that overseas members averaged somewhat more time in the career field (50 months versus 35 months for CONUS airmen) and more time in service (68 months TAFMS versus 55 months for CONUS members). Common job satisfaction indicators of job interest and perceived utilization of talent and training were very similar (positive responses around 80 percent for job interest and utilization of talent and over 70 percent for perceived utilization of training). Positive intentions to remain in the Air Force were reported by 60 percent of the CONUS airmen and 66 percent of the overseas personnel.

## SPECIAL ANALYSIS

### A Profile of Construction Contract Inspectors

A recent change to the AFR 39-1 Specialty Description for Engineering Assistant Specialist (AFSCs 55310/30/50) added a requirement for these airmen to assist in the inspection and evaluation of contract projects under the purview of the Base Civil Engineer (BCE). In the past, contract management responsibilities were found only at the 7-skill level or higher. These contracts may involve base services (e.g., trash collection or custodial service) or complicated construction projects (e.g., buildings, facilities, pavements). As a part of their job, Engineering Assistant personnel are specifically tasked to check for compliance with approved plans and specifications.

During the development phase of the study, there was evidence of concern in the field about the advisability of 5-skill level airmen performing contract management-type tasks, particularly those pertaining to construction contracts. This concern seemed to center primarily on the question of whether 5-skill level personnel have sufficient experience to deal with the potentially complex technical questions and problems involving various kinds of materials, construction procedures, and specifications, as well as being able to interact effectively with the likely more experienced construction contractor representatives. To pursue this question further, survey respondents were screened and separated into appropriate subgroups.

The comparisons discussed here are based on survey sample members' responses to a job inventory background question which contained options for the respondents to select the title which best described their present job. The groups discussed are those who chose the title Construction Contract Inspector. Since most contract management responsibilities previously were limited to personnel holding the 7-skill level or higher, this group was then further divided into two groups, with one group composed of airmen reporting DAFSC 55350, and in the second group are those who indicated holding DAFSC 55370. By comparing these groups, it can be determined if there are significant differences or similarities between them and can help career ladder managers better understand the existence of, or the extent of, potential problems. The Construction Contract Inspector group was selected for this closer evaluation (as opposed to Service Contract Inspectors) because the potential for involvement in high-dollar contracts would appear to be greater and a number of the respondents indicated they also dealt with some service contracts as a part of their job.

Table 26 presents a display of tasks performed by at least 30 percent of the two groups which are representative of the technical aspects of the job performed by Construction Contract Inspectors. Upon close review of the tasks performed, it is evident that substantial percentages of the 5-skill level Construction Contract Inspectors perform essentially the same tasks and duties as the 7-skill level group. This pattern generally holds true, regardless of the level of difficulty of the task. Although the scope of the job for the 7-skill level respondents is slightly broader than the 5-skill level

group (an average of 63 tasks performed versus 51 for the 5-skill level group), the 5-skill level group reports relatively similar responsibilities in the average dollar value of construction contracts inspected (see Table 27).

Since the two groups perform common tasks and have similar inspection responsibilities, one would want to see similar commonality in levels of experience and training received. This, however, is not the case. Again referring to Table 27, it is clear there are rather large differences in experience between the two groups [as measured by the average time in the career field (a variance of over four years) and average time in the service (a variance of over seven years)]. Since this lack of experience can only be overcome by time, the alternative would be to emphasize job specific specialized training. Unfortunately, the disparity in backgrounds of the groups is also found in the specific construction contract inspection training reported by the two groups. While the percentage of 7-skill levels reporting job specific training is not very high (not more than 51 percent), it is still significantly better than the amount reported by the much less experienced 5-skill level members (not more than 18 percent).

While OSR data cannot measure how well sample personnel perform their jobs, the obvious difference in experience levels and training just discussed raises the question of whether 5-skill level airmen can have achieved the high degree of expertise needed in a job responsible for evaluating professional contractor performance on projects which, in many cases, involve millions of dollars. Additionally, it should be noted that the 7-skill level group is composed of a substantial number of respondents who indicated they retrained from another Air Force Specialty (54 percent - the group averages over 13 years in the service but only eight years in the career field). Thus, even the 7-skill level group is not as experienced as comparable groups in ladders where most personnel work their way up through the skill levels over an extended period of time. This lack of "growing up in the career ladder" is particularly a problem in an AFS such as this where training and experience in one major function (e.g., drafting and surveying) serve as a building block and bridge to the other major function (contract management) of the specialty. Although senior grade retrainees (TSgt and up) are, of course, generally required to upgrade through the skill levels, there is still a loss to the contract management process until the retrainee acquires the detailed technical knowledge needed to determine if Air Force contract specifications and procedures are being met.

TABLE 26

EXAMPLES OF TECHNICAL TASKS PERFORMED IN COMMON BY 5-SKILL AND  
7-SKILL LEVEL CONSTRUCTION CONTRACT INSPECTORS  
(30 PERCENT OR MORE PERFORMING)

TASKS	PERCENT MEMBERS PERFORMING		
	5-LEVEL (N=81)	7-LEVEL (N=92)	TASK DIFF
H215 ANALYZE MATERIALS TEST REPORTS	42	58	5.60
H216 ANALYZE PROVISIONS OF CONSTRUCTION CONTRACTS	70	83	5.81
H218 ARRANGE FOR TESTING OF CONSTRUCTION MATERIALS	38	52	4.76
H219 COMPARE CONSTRUCTION TECHNIQUES WITH NATIONAL CODES REFERENCED IN CONTRACT DOCUMENTS	46	73	5.48
H220 CONDUCT ACCEPTANCE INSPECTIONS	78	91	5.82
H222 CONDUCT POST ACCEPTANCE INSPECTIONS	67	77	5.12
H223 CONDUCT PREFINAL INSPECTIONS	85	91	5.64
H225 COORDINATE CONSTRUCTION WITH CONSTRUCTION MANAGER	68	89	3.93
H226 COORDINATE CONSTRUCTION WITH CONTRACTING OFFICE	79	94	4.40
H227 COORDINATE CONSTRUCTION WITH USING AGENCY	78	91	4.05
H229 COORDINATE USE OF GOVERNMENT-FURNISHED EQUIPMENT (GFE)	46	70	4.40
H230 COORDINATE USE OF GOVERNMENT-FURNISHED MATERIAL (GFM)	53	70	4.36
H232 DOCUMENT CONSTRUCTION ACTIVITIES	86	94	4.76
H233 DOCUMENT SAFETY VIOLATIONS	63	78	4.37
H235 EVALUATE DATA ON AF FORMS 3000 (MATERIALS APPROVAL SUBMITTAL)	61	79	5.59
H236 EVALUATE DATA ON AF FORMS 3064 (CONTRACT PROGRESS SCHEDULE)	75	86	5.20
H237 EVALUATE DATA ON AF FORMS 3065 (CONTRACT PROGRESS REPORT)	73	86	5.06
H239 EVALUATE OPERATIONAL TESTS OF ELECTRICAL SYSTEMS	40	58	5.96
H240 EVALUATE OPERATIONAL TESTS OF HEATING SYSTEMS	33	52	5.90
H241 EVALUATE OPERATIONAL TESTS OF PLUMBING SYSTEMS	40	53	5.67
H242 EVALUATE WARRANTIES AND GUARANTEES	51	60	4.90
H243 IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	83	96	5.72
H244 IDENTIFY ON-SITE AND DESIGN DEFICIENCIES	70	94	6.58
H245 MAINTAIN RECORDS OF CONTRACT CHANGES	69	91	4.49
H250 PARTICIPATE IN CONSTRUCTIBILITY REVIEWS	49	76	5.60
H251 PARTICIPATE IN TECHNICAL REVIEWS	40	46	5.81
H252 PARTICIPATE IN PRE-PERFORMANCE CONFERENCES	74	91	4.39
H256 PERFORM SURVEILLANCE OF MILITARY CONSTRUCTION PROGRAM (MCP) PROJECTS	37	58	5.30
H258 PREPARE BRIEFINGS ON CONTRACT STATUS	41	44	5.07
H260 PROCESS CONSTRUCTION PERMITS	54	70	4.33

TABLE 27

SELECTED BACKGROUND DATA FOR 5-SKILL AND 7-SKILL LEVEL  
CONSTRUCTION CONTRACT INSPECTORS

GENERAL BACKGROUND INFORMATION	5-LEVEL (N=81)	7-LEVEL (N=92)
AVERAGE GRADE	4.4	5.9
AVERAGE MONTHS IN PRESENT JOB	13	27
AVERAGE MONTHS IN CAREER FIELD	(47)	97
AVERAGE MONTHS IN SERVICE	(72)	160
PERCENTAGE WHO RETRAINED FROM ANOTHER AFS	30%	(54%)
AVERAGE NUMBER OF TASKS PERFORMED	51	63
AVERAGE DOLLAR VALUE OF CONSTRUCTION CONTRACTS INSPECTED: (PERCENT MEMBERS RESPONDING)		
UP TO \$25,000	3%	1%
\$25,000 TO \$50,000	9%	3%
\$50,000 TO \$100,000	17%	24%
\$100,000 TO \$150,000	21%	13%
\$150,000 TO \$200,000	9%	12%
OVER \$200,000	(37%)	46%
PERCENTAGE ATTENDED CONTRACT INSPECTION TRAINING:*		
J3AZR55000-000, CONTRACT CONSTRUCTION INSPECTOR	(11%)	37%
J4AST55000-000, CONSTRUCTION INSPECTOR	4%	11%
J4AST55000-0001, CONTRACT CONSTRUCTION INSPECTOR	3%	3%

\* MAY HAVE ATTENDED MORE THAN ONE COURSE



## COMPARISON OF CURRENT SURVEY TO PREVIOUS SURVEY

The results of this survey were compared to those of Occupational Survey Report (OSR) 90-553-219, dated 15 June 1976. Comparisons were made to career ladder structure (specialty job) groups and to job satisfaction indicators for TAFMS groups.

Table 28 displays the comparison of the career ladder structure applicable to most 553X0 personnel in 1983 and the structure found in the 1976 sample. Only one group found in the current study could not be linked to some extent to 1976 groups. From this comparison it is quite clear that the 553X0 career ladder has changed very little over time and the high similarity of job groups identified in both samples reflect a very stable career ladder over time.

Review of the comparisons of job satisfaction indicators by TAFMS groups displayed in Table 29 indicates that job interest for the current study first-enlistment group was slightly higher than the 1976 group, while perceived utilization of talents was essentially the same across all the groups. Current study first-term airmen also felt that their training was a little better utilized than did the corresponding 1976 group. Second-enlistment personnel in the current sample were, however, slightly less positive with regard to use of their training. The number of first-term airmen in the current study who are inclined toward reenlistment is substantially higher than the 1976 group, while positive responses from current study airmen in their second enlistment (49-96 months TAFMS) is somewhat lower than in 1976.

TABLE 28

## COMPARISON OF CLUSTERS AND INDEPENDENT JOB TYPES BETWEEN SURVEYS

1983 SURVEY (N=972)	PERCENT OF SAMPLE	1976 SURVEY (N=544)	PERCENT OF SAMPLE
ENGINEERING SECTION PERSONNEL CLUSTER	48	DRAFTING, SURVEY, AND REPRODUCTION SPECIALISTS MASTER PLANNERS AND PROGRAMMERS	57 4
ENGINEERING SUPERVISORS AND INSTRUCTORS	15	SUPERINTENDENTS TECHNICAL SCHOOL INSTRUCTORS	4 1
GROUND RADAR EVALUATORS	1	GROUND RADAR EVALUATION SPECIALISTS	1
RESOURCES AND REQUIREMENTS PLANNERS	.6	COST ESTIMATE SPECIALISTS	1
ENVIRONMENTAL AND CONTRACT PLANNERS	.6	NOT IDENTIFIED	-
CONTRACT MANAGEMENT PERSONNEL CLUSTER	29	CONSTRUCTION INSPECTORS AND ADMINISTRATIVE SPECIALISTS	22
MATERIALS TESTING TECHNICIANS	1	PAVEMENT EVALUATION TECHNICIANS	2

TABLE 29

COMPARISON OF CURRENT SURVEY AND 1976 SURVEY TAFMS GROUPS  
(PERCENT MEMBERS RESPONDING)

	1-48 MONTHS*		49-96 MONTHS		97-144 MONTHS	
	1983 (N=385)	1976 (N=145)	1983 (N=217)	1976 (N=114)	1983 (N=110)	1976 (N=91)
<u>JOB SATISFACTION INFORMATION:</u>						
JOB FAIRLY INTERESTING OR BETTER	77	71	82	83	88	84
TALENTS UTILIZED FAIRLY WELL OR BETTER	78	76	81	83	85	84
TRAINING UTILIZED FAIRLY WELL OR BETTER	75	67	70	75	74	75
FAVORABLY CONSIDERING REENLISTMENT	51	34	68	77	91	90

\* 8-48 MONTHS FOR 1976 GROUP

## IMPLICATIONS

This study was requested to obtain current data to assist training personnel in the evaluation and management of training programs for the career ladder. Review of the Specialty Training Standard (STS) indicated a rather heavy emphasis (in terms of the number and detail of subelements included) on Paragraph 7, CONSTRUCTION MATERIALS TESTS; however, only a very limited number of career ladder personnel actually perform tasks related to this function (see discussion in the SPECIALTY JOBS section and the ANALYSIS OF AFR 39-1 SPECIALTY DESCRIPTIONS section). This heavy emphasis in the STS may be misleading to career ladder members and could even result in undue weighting consideration in the specialty knowledge testing program.

Another matter that should be of concern to career ladder managers is the variance in experience levels between 5-skill level and 7-skill level Construction Contract Inspectors who are performing essentially the same job. As previously pointed out, there is also a decided difference in the formal contract oriented training reported by the two groups.

According to information received during discussions with field and MAJCOM personnel, use of the 5-skill level airmen in these inspector positions is driven by the lack of sufficient qualified 7-skill level personnel to staff the Contract Management function (manning at the 7-skill level is about 80 percent of the authorized strength). If full manning of authorized 7-skill level positions is not possible, at least in the short term, it would seem that increased training requirements for 5-skill level airmen assigned against those positions should be implemented. While this will not substitute for the experience so necessary in this type of inspection work, it certainly would be a step in the right direction. It may even be advisable to require mandatory attendance at a construction contract inspection training course and a specified minimum amount of experience in drafting and surveying functions before a 5-skill level airman could be assigned to a Construction Contract Inspector position.

Discussion with field supervisors and MAJCOM level functional personnel suggests that other approaches currently are being used by bases and major commands to deal with the lack of fully qualified senior technicians. One approach involves pulling craftsmen from the various CE shops (e.g., carpenter, refrigeration, heating, electrical) and working them in the inspection function on contracts pertinent to their skills. The drawback to this approach is that the craftsmen are not knowledgeable of the administrative aspects of the contract process. Thus, they must be given training in this area, or else coupled with a 553X0 airman who can provide this knowledge (a team approach, with two people doing a job that one properly qualified Engineering Assistant should do). Another alternative identified involved hiring area architectural and engineering firms to perform the necessary construction contract inspections. This, of course, is another contract to be monitored by someone and does not seem to be a procedure the Air Force would want to continue.

The experience problem in the contract management function is a complex one. While increasing the 7-skill level manning seems to be the obvious solution, this may not be possible. It would appear that a utilization and training workshop for this career ladder is needed to allow MAJCOM representatives, the Air Force functional manager, and training personnel to address the issue. It is also strongly suggested that military classification and manpower personnel participate in this workshop so all aspects of the problem can be examined and coordinated efforts made to resolve them.

APPENDIX A  
SELECTED REPRESENTATIVE TASKS  
FOR  
CAREER LADDER STRUCTURE GROUPS

TABLE I  
ENGINEERING SECTION PERSONNEL CLUSTER  
(GRP038)

TASKS	PERCENT MEMBERS PERFORMING (N=464)
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	97
G201 PREPARE DRAWINGS USING INK	93
G197 LETTER DRAWINGS USING MECHANICAL LETTERING SETS	92
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	85
G211 READ AND INTERPRET BLUEPRINTS	84
G214 UPDATE AS-BUILTS	83
F177 MEASURE DISTANCES USING TAPES	83
G198 MAINTAIN DRAWING FILES	82
F191 SET TRIPODS	73
L329 FIRE M-16 RIFLES	71
L326 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	66
G194 DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	66
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	61
G200 PERFORM REPRODUCTION MACHINE OPERATOR MAINTENANCE	61
F187 PROLONG A STRAIGHT LINE	59
F179 MEASURE STADIA DISTANCES	57
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	57
G195 DRAW ENGINEERING SKETCHES	56
G205 PREPARE ORGANIZATIONAL CHARTS	56
G209 PRODUCE INTERMEDIATE MASTERS USING SCISSOR EDITING	50
G213 REVIEW FINISHED DRAWINGS	50
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	50
F145 COMMUNICATE USING STANDARDIZED HAND SIGNALS	49
F180 MEASURE VERTICAL ANGLES	48
L360 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	47
F181 MEASURE VERTICAL DISTANCES OR HEIGHTS	45
F174 MARK AND SET CONSTRUCTION STAKES	45
L324 ASSEMBLE AM-2 MATTING FOR RAPID RUNWAY REPAIRS	43
L328 ERECT TENTS	42
G210 PRODUCE INTERMEDIATE MASTERS USING TRANSPARENT MATTE TAPE	38
G208 PRODUCE INTERMEDIATE MASTERS USING MASKING OR BLOCK-OUT METHOD	37
F158 COMPUTE LEVEL CIRCUIT DATA	37
G199 MEASURE IRREGULAR LINES	37
A15 PLAN OR PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	36
F157 COMPUTE HORIZONTAL OR VERTICAL DISTANCES	36
L330 IDENTIFY AND REPORT SUSPECTED ORDNANCE	36
G202 PREPARE GEOMETRICAL CONSTRUCTION DRAWINGS	35
G203 PREPARE ILLUSTRATION DRAWINGS	35

TABLE IA  
SURVEYING AND DRAFTING SPECIALISTS  
(GRP173)

TASKS	PERCENT MEMBERS PERFORMING (N=108)
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	99
F177 MEASURE DISTANCES USING TAPES	99
G211 READ AND INTERPRET BLUEPRINTS	99
G201 PREPARE DRAWINGS USING INK	97
G197 LETTER DRAWINGS USING MECHANICAL LETTERING SETS	95
F191 SET TRIPODS	94
F179 MEASURE STADIA DISTANCES	93
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	92
F187 PROLONG A STRAIGHT LINE	92
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	91
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	89
G198 MAINTAIN DRAWING FILES	89
L329 FIRE M-16 RIFLES	89
G214 UPDATE AS-BUILTS	88
F181 MEASURE VERTICAL DISTANCES OR HEIGHTS	85
F145 COMMUNICATE USING STANDARIZED HAND SIGNALS	83
F180 MEASURE VERTICAL ANGLES	81
G213 REVIEW FINISHED DRAWINGS	80
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	80
G194 DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	79
G200 PERFORM REPRODUCTION MACHINE OPERATOR MAINTENANCE	77
G209 PRODUCE INTERMEDIATE MASTERS USING SCISSOR EDITING	75
G195 DRAW ENGINEERING SKETCHES	74
F158 COMPUTE LEVEL CIRCUIT DATA	74
L360 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	72
F174 MARK AND SET CONSTRUCTION STAKES	71
L328 ERECT TENTS	71
F157 COMPUTE HORIZONTAL OR VERTICAL DISTANCES	70
L324 ASSEMBLE AM-2 MATTING FOR RAPID RUNWAY REPAIRS	70
F146 COMPUTE AZIMUTHS AND BEARINGS	69
G205 PREPARE ORGANIZATIONAL CHARTS	64
F171 ESTABLISH VERTICAL CONTROL	61
F182 OBTAIN BACKGROUND RECONNAISSANCE INFORMATION ON SITES TO BE SURVEYED	60
G199 MEASURE IRREGULAR LINES	60
G206 PREPARE ORTHOGRAPHIC PROJECTION DRAWINGS	58
F169 ESTABLISH HORIZONTAL CONTROL BY TRAVERSING	58
F167 ESTABLISH BUILDING CORNERS FOR NEW CONSTRUCTION SITES	56
F143 CLEAN AND LUBRICATE SURVEY EQUIPMENT	55



TABLE 1B  
SUPERVISORY DRAFTSMEN  
(GRP108)

TASKS	PERCENT MEMBERS PERFORMING (N=26)
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	100
G198 MAINTAIN DRAWING FILES	100
G197 LETTER DRAWINGS USING MECHANICAL LETTERING SETS	96
G214 UPDATE AS-BUILTS	92
F177 MEASURE DISTANCES USING TAPES	92
G211 READ AND INTERPRET BLUEPRINTS	88
G201 PREPARE DRAWINGS USING INK	88
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	85
G195 DRAW ENGINEERING SKETCHES	81
G194 DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	81
B40 INTERPRET ENGINEERING PLANS FOR SUBORDINATES	81
G213 REVIEW FINISHED DRAWINGS	73
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	73
L329 FIRE M-16 RIFLES	73
A15 PLAN OR PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	69
B43 SUPERVISE APPRENTICE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55330)	62
G209 PRODUCE INTERMEDIATE MASTERS USING SCISSOR EDITING	62
D76 CONDUCT OJT	62
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	62
G205 PREPARE ORGANIZATIONAL CHARTS	62
G200 PERFORM REPRODUCTION MACHINE OPERATOR MAINTENANCE	58
A4 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	58
B47 WRITE CORRESPONDENCE	58
F191 SET TRIPODS	58
G210 PRODUCE INTERMEDIATE MASTERS USING TRANSPARENT MATTE TAPE	54
B41 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	54
C69 PREPARE APRs	54
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	54
G208 PRODUCE INTERMEDIATE MASTERS USING MASKING OR BLOCK-OUT METHOD	50
A18 PLAN WORK ASSIGNMENTS	50
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	50
F179 MEASURE STADIA DISTANCES	50
A11 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	46
A5 DETERMINE WORK PRIORITIES	46
D79 COUNSEL TRAINEES ON TRAINING PROGRESS	46

TABLE IC  
FIRST JOB SURVEYORS  
(GRP090)

TASKS	PERCENT MEMBERS PERFORMING (N=6)
F139 ASSEMBLE OR DISASSEMBLE SURVEYING EQUIPMENT	100
F177 MEASURE DISTANCES USING TAPES	100
F145 COMMUNICATE USING STANDARDIZED HAND SIGNALS	83
F191 SET TRIPODS	83
F142 CENTER SURVEYING INSTRUMENTS	83
G214 UPDATE AS-BUILTS	83
F143 CLEAN AND LUBRICATE SURVEY EQUIPMENT	83
L329 FIRE M-16 RIFLES	83
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	67
F174 MARK AND SET CONSTRUCTION STAKES	67
G198 MAINTAIN DRAWING FILES	67
F187 PROLONG A STRAIGHT LINE	67
F138 ADJUST SURVEYING EQUIPMENT	50
F157 COMPUTE HORIZONTAL OR VERTICAL DISTANCES	50
G201 PREPARE DRAWINGS USING INK	50
F144 COMMUNICATE USING FIELD RADIOS	50
F179 MEASURE STADIA DISTANCES	50
G194 DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	50
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	50
F195 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	50
G197 LETTER DRAWINGS USING MECHANICAL LETTERING SETS	50
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	50
G211 READ AND INTERPRET BLUEPRINTS	33
G200 PERFORM REPRODUCTION MACHINE OPERATOR MAINTENANCE	33
F180 MEASURE VERTICAL ANGLES	33
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	33
F182 OBTAIN BACKGROUND RECONNAISSANCE INFORMATION ON SITES TO BE SURVEYED	33
F181 MEASURE VERTICAL DISTANCES OR HEIGHTS	33
F158 COMPUTE LEVEL CIRCUIT DATA	33
F161 COMPUTE TRAVERSE DATA	33
F140 CALIBRATE ELECTRONIC DISTANCE MEASURING DEVICES	33
A15 PLAN OR PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	33
F146 COMPUTE AZIMUTHS AND BEARINGS	33
G204 PREPARE OBLIQUE PROJECTION DRAWINGS	33

TABLE ID  
MASTER PLAN DEVELOPERS  
(GRP122)

TASKS	PERCENT MEMBERS PERFORMING (N=6)
G201 PREPARE DRAWINGS USING INK	100
J309 REVIEW DEVELOPMENT MAPS	100
G211 READ AND INTERPRET BLUEPRINTS	100
G197 LETTER DRAWINGS USING MECHANICAL LETTERING SETS	100
B47 WRITE CORRESPONDENCE	100
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	100
J304 PREPARE DEVELOPMENT MAPS	83
A3 COORDINATE PROPOSED MILITARY CONSTRUCTION MASTER PLANS WITH USING ORGANIZATIONS	83
J308 PREPARE WRITTEN EVALUATIONS OF BASE MASTER PLANS	83
G198 MAINTAIN DRAWING FILES	83
G200 PERFORM REPRODUCTION MACHINE OPERATOR MAINTENANCE	83
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	67
G213 REVIEW FINISHED DRAWINGS	67
G194 DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	67
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	67
G193 DEVELOP COMPOSITE OVERLAYS OF INTERMEDIATES	67
A15 PLAN OR PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	67
G209 PRODUCE INTERMEDIATE MASTERS USING SCISSOR EDITING	67
G208 PRODUCE INTERMEDIATE MASTERS USING MASKING OR BLOCK-OUT METHOD	67
F177 MEASURE DISTANCES USING TAPES	67
E101 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	67
J305 PREPARE ENGINEERING PLANS OR PROJECTS FOR SUBMITTAL TO PROFESSIONAL ENGINEERING STAFFS	50
A13 PLAN LAYOUT OF FACILITIES	50
G214 UPDATE AS-BUILTS	50
G203 PREPARE ILLUSTRATION DRAWINGS	50
F182 OBTAIN BACKGROUND RECONNAISSANCE INFORMATION ON SITES TO BE SURVFYED	50
F145 COMMUNICATE USING STANDARDIZED HAND SIGNALS	50
B40 INTERPRET ENGINEERING PLANS FOR SUBORDINATES	50
F187 PROLONG A STRAIGHT LINE	50
J310 REVIEW SUPPLY CATALOGUES OR COMMERCIAL PRICING GUIDES	50
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	50
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	50
G210 PRODUCE INTERMEDIATE MASTERS USING TRANSPARENT MATTE TAPE	50
F191 SET TRIPODS	50
G205 PREPARE ORGANIZATIONAL CHARTS	50

TABLE II  
ENGINEERING SUPERVISORS AND INSTRUCTORS  
(GRP036)

TASKS	PERCENT MEMBERS PERFORMING (N=146)
F177 MEASURE DISTANCES USING TAPES	84
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	84
G213 REVIEW FINISHED DRAWINGS	83
A5 DETERMINE WORK PRIORITIES	82
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	81
A18 PLAN WORK ASSIGNMENTS	80
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	80
B40 INTERPRET ENGINEERING PLANS FOR SUBORDINATES	80
C69 PREPARE APRs	80
G211 READ AND INTERPRET BLUEPRINTS	79
B41 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	78
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	76
B43 SUPERVISE APPRENTICE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55330)	76
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	76
B44 SUPERVISE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55350)	75
D79 COUNSEL TRAINEES ON TRAINING PROGRESS	75
F191 SET TRIPODS	73
F179 MEASURE STADIA DISTANCES	73
D91 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	73
A11 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	73
D76 CONDUCT OJT	73
F187 PROLONG A STRAIGHT LINE	73
A26 SCHEDULE LEAVES OR PASSES	71
A7 DEVELOP WORK METHODS OR PROCEDURES	70
B47 WRITE CORRESPONDENCE	69
D74 ASSIGN ON-THE-JOB TRAINING (OJT)	69
F180 MEASURE VERTICAL ANGLES	69
F145 COMMUNICATE USING STANDARDIZED HAND SIGNALS	69
B32 DIRECT UTILIZATION OF EQUIPMENT	69
F158 COMPUTE LEVEL CIRCUIT DATA	69
C56 EVALUATE FIELD NOTES	68
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	66
D88 EVALUATE OJT TRAINEES	66
D80 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	65
B31 DIRECT MAINTENANCE OF EQUIPMENT	64
G198 MAINTAIN DRAWING FILES	63
C53 EVALUATE COMPLIANCE WITH WORK STANDARDS	62
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	59

TABLE IIA  
NCOICs AND SECTION CHIEFS  
(GRP149)

TASKS	PERCENT MEMBERS PERFORMING (N=33)
B44 SUPERVISE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55350)	97
B47 WRITE CORRESPONDENCE	97
B41 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	97
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	97
C69 PREPARE AIRMAN PERFORMANCE REPORTS (APRs)	97
A26 SCHEDULE LEAVES OR PASSES	97
A2 ASSIGN SPONSORS FOR NEWLY ASSIGNED PERSONNEL	97
A5 DETERMINE WORK PRIORITIES	94
A18 PLAN WORK ASSIGNMENTS	94
D74 ASSIGN ON-THE-JOB TRAINING (OJT)	94
A1 ASSIGN PERSONNEL TO DUTY POSITIONS	91
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	88
B40 INTERPRET ENGINEERING PLANS FOR SUBORDINATES	88
A7 DEVELOP WORK METHODS OR PROCEDURES	88
B43 SUPERVISE APPRENTICE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55330)	85
A11 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	85
C48 ANALYZE WORKLOAD REQUIREMENTS	85
C53 EVALUATE COMPLIANCE WITH WORK STANDARDS	85
D81 DETERMINE OJT REQUIREMENTS	85
A4 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	85
G213 REVIEW FINISHED DRAWINGS	82
D91 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	82
C57 EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	82
C60 EVALUATE MAINTENANCE OR USE OF WORKSPACE, EQUIPMENT, OR SUPPLIES	82
D79 COUNSEL TRAINEES ON TRAINING PROGRESS	82
C67 INDORSE APRs	82
G211 READ AND INTERPRET BLUEPRINTS	76
B34 ESTABLISH REVIEW AND REVISION PROGRAMS FOR AS-BUILT PLANS	76
D92 PLAN OR SCHEDULE OJT	76
C59 EVALUATE JOB DESCRIPTIONS	76
B32 DIRECT UTILIZATION OF EQUIPMENT	70
B46 SUPERVISE ENGINEERING ASSISTANT TECHNICIANS (AFSC 55370)	64
B39 INITIATE PERSONNEL ACTION REQUESTS	64
C71 WRITE CIVILIAN PERFORMANCE RATINGS OR SUPERVISORY APPRAISALS	58

TABLE IIB  
SUPERVISORY SURVEYORS  
(GRP103)

TASKS	PERCENT MEMBERS PERFORMING (N=17)
F177 MEASURE DISTANCES USING TAPES	100
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	100
F179 MEASURE STADIA DISTANCES	94
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	94
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	94
F191 SET TRIPODS	94
F145 COMMUNICATE USING STANDARDIZED HAND SIGNALS	88
F171 ESTABLISH VERTICAL CONTROL	82
F169 ESTABLISH HORIZONTAL CONTROL BY TRAVERSING	82
F180 MEASURE VERTICAL ANGLES	82
F174 MARK AND SET CONSTRUCTION STAKES	76
F187 PROLONG A STRAIGHT LINE	71
F167 ESTABLISH BUILDING CORNERS FOR NEW CONSTRUCTION SITES	71
F158 COMPUTE LEVEL CIRCUIT DATA	71
F181 MEASURE VERTICAL DISTANCES OR HEIGHTS	71
L329 FIRE M-16 RIFLES	71
F157 COMPUTE HORIZONTAL OR VERTICAL DISTANCES	65
D76 CONDUCT OJT	65
F184 PERFORM DIFFERENTIAL LEVELING	59
B43 SUPERVISE APPRENTICE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55330)	59
F182 OBTAIN BACKGROUND RECONNAISSANCE INFORMATION ON SITES TO BE SURVEYED	59
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	59
L326 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	59
F146 COMPUTE AZUMUTHS AND BEARINGS	59
G211 READ AND INTERPRET BLUEPRINTS	53
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	53
F173 MAINTAIN FIELD SURVEY FILES	53
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	53
C56 EVALUATE FIELD NOTES	53
A5 DETERMINE WORK PRIORITIES	53
F138 ADJUST SURVEYING EQUIPMENT	53
L360 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	47
C69 PREPARE APRs	47
B40 INTERPRET ENGINEERING PLANS FOR SUBORDINATES	47
B41 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	47

TABLE IIC  
TECHNICAL SCHOOL INSTRUCTORS  
(GRP222)

TASKS	PERCENT MEMBERS PERFORMING (N=8)
D77 CONDUCT RESIDENT COURSE CLASSROOM TRAINING	100
D73 ADMINISTER TESTS	100
D94 SCORE TESTS	100
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	100
F177 MEASURE DISTANCES USING TAPES	100
F146 COMPUTE AZIMUTHS AND BEARINGS	100
F169 ESTABLISH HORIZONTAL CONTROL BY TRAVERSING	100
C56 EVALUATE FIELD NOTES	100
F171 ESTABLISH VERTICAL CONTROL	100
F153 COMPUTE EARTHWORK VOLUMES USING EARTHWORK TABLES	100
F161 COMPUTE TRAVERSE DATA	100
F160 COMPUTE SLOPE STAKE DATA	100
F157 COMPUTE HORIZONTAL OR VERTICAL DISTANCES	100
F191 SET TRIPODS	100
F184 PERFORM DIFFERENTIAL LEVELING	100
F155 COMPUTE HORIZONTAL CURVE DATA USING ARC METHOD	100
F167 ESTABLISH BUILDING CORNERS FOR NEW CONSTRUCTION SITES	100
F163 COMPUTE VERTICAL CURVE USING TANGENT OFFSET METHOD	100
F158 COMPUTE LEVEL CIRCUIT DATA	100
F179 MEASURE STADIA DISTANCES	100
F159 COMPUTE LINEAR ERROR OF CLOSURE	100
F137 ADJUST LEVEL CIRCUIT DATA	100
F180 MEASURE VERTICAL ANGLES	100
F187 PROLONG A STRAIGHT LINE	100
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	88
D91 MAINTAIN TRAINING RECORDS, CHARTS, OR GRAPHS	88
D80 DEMONSTRATE HOW TO LOCATE TECHNICAL INFORMATION	88
F181 MEASURE VERTICAL DISTANCES OR HEIGHTS	88
F151 COMPUTE EARTHWORK VOLUMES BY AVERAGE-END-AREA METHOD	88
F138 ADJUST SURVEYING EQUIPMENT	88
B32 DIRECT UTILIZATION OF EQUIPMENT	75
D89 EVALUATE PROGRESS OF RESIDENT COURSE STUDENTS	75
D79 COUNSEL TRAINEES ON TRAINING PROGRESS	75
F166 DRAW TOPOGRAPHIC MAPS FROM SURVEY DATA	75
F142 CENTER SURVEYING INSTRUMENTS	75
F143 CLEAN AND LUBRICATE SURVEY EQUIPMENT	75
F174 MARK AND SET CONSTRUCTION STAKES	63
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	63
F164 COMPUTE VERTICAL ERROR OF CLOSURE	63

TABLE III

GROUND RADAR EVALUATORS  
(GRP166)

TASKS	PERCENT MEMBERS PERFORMING (N=12)
K314 COLLECT PHYSICAL RADAR SITE DATA	100
K323 RECORD FIELD NOTES USING RADAR EVALUATION PROCEDURES	100
K319 DRAW PICTORAL SITE PLANS	100
K317 CONSTRUCT MOVABLE RADAR COVERAGE INDICATORS	100
K318 DRAW LOBING GRAPHS	100
K313 CALCULATE MAGNETIC DECLINATION	100
F177 MEASURE DISTANCES USING TAPES	100
K322 FORMAT FIELD DATA FOR COMPUTER INPUT	92
K320 ESTABLISH BASELINES	92
G197 LETTER DRAWINGS USING MECHANICAL LETTERING SETS	92
K316 COMPUTE SURVEYED SHADOW AND VERTICAL ANGLES	92
F180 MEASURE VERTICAL ANGLES	92
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	92
K312 ANALYZE RADAR LINE OF SIGHT IN RELATION TO GROUND ELEVATION	83
K321 ESTABLISH HORIZONTAL PROFILES	83
G201 PREPARE DRAWINGS USING INK	83
F188 RECORD FIELD NOTES USING STANDARD SURVEYING PROCEDURES	83
F146 COMPUTE AZIMUTHS AND BEARINGS	83
C56 EVALUATE FIELD NOTES	83
E102 KEYPUNCH DATA CARDS	75
F181 MEASURE VERTICAL DISTANCES OR HEIGHTS	75
F192 TURN TO MEASURE OR ESTABLISH HORIZONTAL ANGLES	75
F157 COMPUTE HORIZONTAL OR VERTICAL DISTANCES	75
E116 MAKE ENTRIES ON AF FORMS 1530 (PUNCH CARD TRANSCRIPT)	67
A15 PLAN OR PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	67
D76 CONDUCT OJT	67
F191 SET TRIPODS	67
K315 COMPUTE SOLAR DATA	58
G205 PREPARE ORGANIZATIONAL CHARTS	58
F158 COMPUTE LEVEL CIRCUIT DATA	58
L329 FIRE M-16 RIFLES	58
F171 ESTABLISH VERTICAL CONTROL	50
F154 COMPUTE GEOGRAPHICAL LATITUDE AND LONGITUDE DATA	50
B44 SUPERVISE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55350)	50
D88 EVALUATE OJT TRAINEES	50
F173 MAINTAIN FIELD SURVEY FILES	50
L326 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	50
F179 MEASURE STADIA DISTANCES	50



TABLE IV  
RESOURCES AND REQUIREMENTS PLANNERS  
(GRP089)

TASKS	PERCENT MEMBERS PERFORMING (N=6)
J306 PREPARE FINAL COST ESTIMATES	100
E124 MAKE ENTRIES ON AF FORMS 322 (BCE WORK REQUEST)	83
E123 MAKE ENTRIES ON AF FORMS 327 (BASE CIVIL ENGINEER WORK ORDER)	83
G211 READ AND INTERPRET BLUEPRINTS	83
E112 MAKE ENTRIES ON AF FORMS 103 (BASE CIVIL ENGINEERING WORK CLEARANCE REQUEST)	83
E113 MAKE ENTRIES ON AF FORMS 1135 (BCE REAL PROPERTY MAINTENANCE REQUEST)	83
L360 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	83
L328 ERECT TENTS	83
J298 COORDINATE COST ESTIMATES WITH PROGRAMMING PERSONNEL	67
E115 MAKE ENTRIES ON AF FORMS 1445 (MATERIALS AND EQUIPMENT LIST)	67
J303 PREPARE BILLS OF MATERIALS	67
F177 MEASURE DISTANCES USING TAPES	67
J310 REVIEW SUPPLY CATALOGUES OR COMMERCIAL PRICING GUIDES	67
G195 DRAW ENGINEERING SKETCHES	67
C48 ANALYZE WORKLOAD REQUIREMENTS	67
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	67
G203 PREPARE ILLUSTRATION DRAWINGS	67
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	67
L324 ASSEMBLE AM-2 MATTING FOR RAPID RUNWAY REPAIRS	67
L362 REPAIR SMALL PAVEMENT BOMB CRATERS	67
J297 COMPARE ACTUAL COST ESTIMATES WITH PROGRAMMED COST ESTIMATES	50
A7 DEVELOP WORK METHODS OR PROCEDURES	50
E119 MAKE ENTRIES ON AF FORMS 1879 (BCE JOB ORDER RECORD)	50
J311 REVIEW WORK ORDERS, PLANS, OR SPECIFICATIONS PRIOR TO PROCUREMENT ACTIONS	50
A25 REVIEW WORK ORDERS	50
J305 PREPARE ENGINEERING PLANS OR PROJECTS FOR SUBMITTAL TO PROFESSIONAL ENGINEERING STAFFS	50
G194 DEVELOP MODIFICATIONS FROM EXISTING DRAWINGS	50
E126 MAKE ENTRIES ON AF FORMS 601B (CUSTODIAN REQUEST/RECEIPT)	50
G207 PREPARE PERSPECTIVE PROJECTION DRAWINGS	50

TABLE V  
ENVIRONMENTAL AND CONTRACT PLANNERS  
(GRP059)

TASKS	PERCENT MEMBERS PERFORMING (N=6)
B47 WRITE CORRESPONDENCE	100
A14 PLAN OR PREPARE BRIEFINGS	100
J298 COORDINATE COST ESTIMATES WITH PROGRAMMING PERSONNEL	83
J297 COMPARE ACTUAL COST ESTIMATES WITH PROGRAMMED COST ESTIMATES	83
J301 ORGANIZE DATA FOR COMPUTER INPUTS	83
E135 PREPARE CONTRACT FOLDERS	83
G195 DRAW ENGINEERING SKETCHES	83
J305 PREPARE ENGINEERING PLANS OR PROJECTS FOR SUBMITTAL TO PROFESSIONAL ENGINEERING STAFFS	67
J304 PREPARE DEVELOPMENT MAPS	67
J307 PREPARE STATUS OR PROGRESS REPORTS	67
L329 FIRE M-16 RIFLES	67
E124 MAKE ENTRIES ON AF FORMS 332 (BCE WORK REQUEST)	67
L326 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	67
G212 REPRODUCE DRAWINGS ON REPRODUCTION MACHINES	67
A15 PLAN OR PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	67
E131 MAKE ENTRIES ON DD FORMS 1391 (MILITARY CONSTRUCTION PROJECT DATA)	50
E104 MAINTAIN ADMINISTRATIVE FILES	50
A25 REVIEW WORK ORDERS	50
G213 REVIEW FINISHED DRAWINGS	50
L324 ASSEMBLE AM-2 MATTING FOR RAPID RUNWAY REPAIRS	50
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	50
G211 READ AND INTERPRET BLUEPRINTS	50
A3 COORDINATE PROPOSED MILITARY CONSTRUCTION MASTER PLANS WITH USING ORGANIZATIONS	50
A4 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	50
A22 PREPARE OR UPDATE LOCAL OPERATING INSTRUCTIONS	50
G201 PREPARE DRAWINGS USING INK	50
J311 REVIEW WORK ORDERS, PLANS, OR SPECIFICATIONS PRIOR TO PROCUREMENT ACTIONS	33
E109 MAINTAIN PUBLICATION LIBRARIES	33
E113 MAKE ENTRIES ON AF FORMS 1135 (BCE REAL PROPERTY MAINTENANCE REQUEST)	33
A13 PLAN LAYOUT OF FACILITIES	33
J309 REVIEW DEVELOPMENT MAPS	33
A5 DETERMINE WORK PRIORITIES	33

TABLE VI  
CONTRACT MANAGEMENT PERSONNEL CLUSTER  
(GRP010)

TASKS	PERCENT MEMBERS PERFORMING (N=279)
H243 IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	85
H252 PARTICIPATE IN PRE-PERFORMANCE CONFERENCES	80
H220 CONDUCT ACCEPTANCE INSPECTIONS	80
H223 CONDUCT PRE-FINAL INSPECTIONS	78
B47 WRITE CORRESPONDENCE	78
H232 DOCUMENT CONSTRUCTION ACTIVITIES	77
E105 MAINTAIN DAILY INSPECTION RECORDS	76
H245 MAINTAIN RECORDS OF CONTRACT CHANGES	76
H227 COORDINATE CONSTRUCTION WITH USING AGENCY	75
H226 COORDINATE CONSTRUCTION WITH CONTRACTING OFFICE	75
H244 IDENTIFY ON-SITE AND DESIGN DEFICIENCIES	73
H247 MAKE ENTRIES ON AF FORM 1477 (CONSTRUCTION INSPECTION RECORD)	72
H216 ANALYZE PROVISIONS OF CONSTRUCTION CONTRACTS	69
H224 COORDINATE CONSTRUCTION PERMITS WITH BASE AGENCIES, SUCH AS SECURITY POLICE OR GROUND SAFETY	69
H236 EVALUATE DATA ON AF FORMS 3064 (CONTRACT PROGRESS SCHEDULE)	68
A9 ESCORT PROSPECTIVE CONTRACTORS	68
H225 COORDINATE CONSTRUCTION WITH CONSTRUCTION MANAGER	68
H237 EVALUATE DATA ON AF FORMS 3065 (CONTRACT PROGRESS REPORT)	67
H259 PREPARE PRE-FINAL PUNCH LISTS	66
H222 CONDUCT POST-ACCEPTANCE INSPECTIONS	64
E122 MAKE ENTRIES ON AF FORMS 3065	63
E135 PREPARE CONTRACT FOLDERS	63
H233 DOCUMENT SAFETY VIOLATIONS	62
H235 EVALUATE DATA ON AF FORMS 3000 (MATERIAL APPROVAL SUBMITTAL)	61
C55 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR CONSTRUCTIBILITY	59
H250 PARTICIPATE IN CONSTRUCTIBILITY REVIEWS	59
H230 COORDINATE USE OF GOVERNMENT-FURNISHED MATERIAL (GFM)	57
H221 CONDUCT ON-SITE VISITS OF OFFICIAL VISITORS	57
E121 MAKE ENTRIES ON AF FORMS 3064 (CONTRACT PROGRESS SCHEDULE)	56
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	55
H229 COORDINATE USE OF GOVERNMENT-FURNISHED EQUIPMENT (GFE)	53
H228 COORDINATE ON-SITE VISITS OF OFFICIAL VISITORS	53
H254 PERFORM QUALITY ASSURANCE EVALUATIONS (QAE)	52
C62 EVALUATE PROJECT SPECIFICATIONS	52
A19 PREPARE CHANGE ORDERS ON AWARDED CONTRACTS	51
H260 PROCESS CONSTRUCTION PERMITS	51

TABLE VIA  
CONSTRUCTION CONTRACT INSPECTORS  
(GRP100)

TASKS	PERCENT MEMBERS PERFORMING (N=178)
H232 DOCUMENT CONSTRUCTION ACTIVITIES	97
H223 CONDUCT PRE-FINAL INSPECTIONS	95
H247 MAKE ENTRIES ON AF FORMS 1477 (CONSTRUCTION INSPECTION RECORD)	94
H226 COORDINATE CONSTRUCTION WITH CONTRACTING OFFICE	94
H243 IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	94
H227 COORDINATE CONSTRUCTION WITH USING AGENCY	92
H252 PARTICIPATE IN PRE-PERFORMANCE CONFERENCES	92
H220 CONDUCT ACCEPTANCE INSPECTIONS	91
H245 MAINTAIN RECORDS OF CONTRACT CHANGES	90
E105 MAINTAIN DAILY INSPECTION RECORDS	90
H236 EVALUATE DATA ON AF FORMS 3064 (CONTRACT PROGRESS SCHEDULE)	90
H244 IDENTIFY ON-SITE AND DESIGN DEFICIENCIES	89
H225 COORDINATE CONSTRUCTION WITH CONSTRUCTION MANAGER	88
H237 EVALUATE DATA ON AF FORMS 3065 (CONTRACT PROGRESS REPORT)	88
H259 PREPARE PRE-FINAL PUNCH LISTS	87
H216 ANALYZE PROVISIONS OF CONSTRUCTION CONTRACTS	85
H224 COORDINATE CONSTRUCTION PERMITS WITH BASE AGENCIES	84
E122 MAKE ENTRIES ON AF FORMS 3065 (CONTRACT PROGRESS REPORT)	81
B47 WRITE CORRESPONDENCE	81
H233 DOCUMENT SAFETY VIOLATIONS	80
H222 CONDUCT POST-ACCEPTANCE INSPECTIONS	78
A9 ESCORT PROSPECTIVE CONTRACTORS	78
H235 EVALUATE DATA ON AF FORMS 3000 (MATERIAL APPROVAL SUBMITTAL)	77
E135 PREPARE CONTRACT FOLDERS	74
E121 MAKE ENTRIES ON AF FORMS 3064 (CONTRACT PROGRESS SCHEDULE)	73
H250 PARTICIPATE IN CONSTRUCTIBILITY REVIEWS	70
C55 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR CONSTRUCTIBILITY	70
H262 SKETCH CONSTRUCTION CHANGES ON AS-BUILTS	67
H230 COORDINATE USE OF GOVERNMENT-FURNISHED MATERIAL (GFM)	67
H219 COMPARE CONSTRUCTION TECHNIQUES WITH NATIONAL CODES REFERENCED IN CONTRACT DOCUMENTS	67
H260 PROCESS CONSTRUCTION PERMITS	66
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	63
H242 EVALUATE WARRANTIES AND GUARANTEES	61
A19 PREPARE CHANGE ORDERS ON AWARDED CONTRACTS	57
H215 ANALYZE MATERIALS TEST REPORTS	53

TABLE VIB  
CONTRACT MANAGEMENT SUPERVISORS  
(GRP109)

TASKS	PERCENT MEMBERS PERFORMING (N=34)
B47 WRITE CORRESPONDENCE	100
C58 EVALUATE INSPECTION REPORTS OR PROCEDURES	91
H252 PARTICIPATE IN PRE-PERFORMANCE CONFERENCES	91
H227 COORDINATE CONSTRUCTION WITH USING AGENCY	91
C62 EVALUATE PROJECT SPECIFICATIONS	88
H216 ANALYZE PROVISIONS OF CONSTRUCTION CONTRACTS	88
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	88
H250 PARTICIPATE IN CONSTRUCTIBILITY REVIEWS	88
H258 PREPARE BRIEFINGS ON CONTRACT STATUS	85
B41 INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	85
B40 INTERPRET ENGINEERING PLANS FOR SUBORDINATES	82
H223 CONDUCT PRE-FINAL INSPECTIONS	82
H226 COORDINATE CONSTRUCTION WITH CONTRACTING OFFICE	79
C53 EVALUATE COMPLIANCE WITH WORK STANDARDS	79
H251 PARTICIPATE IN TECHNICAL REVIEWS	79
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	76
H243 IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	76
H220 CONDUCT ACCEPTANCE INSPECTIONS	76
A11 ESTABLISH PERFORMANCE STANDARDS FOR SUBORDINATES	76
A7 DEVELOP WORK METHODS OR PROCEDURES	76
C69 PREPARE APRs	76
H222 CONDUCT POST-ACCEPTANCE INSPECTIONS	76
A26 SCHEDULE LEAVES OR PASSES	76
A14 PLAN OR PREPARE BRIEFINGS	74
C48 ANALYZE WORKLOAD REQUIREMENTS	74
H232 DOCUMENT CONSTRUCTION ACTIVITIES	74
H235 EVALUATE DATA ON AF FORMS 3000 (MATERIAL APPROVAL SUBMITTAL)	74
H244 IDENTIFY ON-SITE AND DESIGN DEFICIENCIES	74
A5 DETERMINE WORK PRIORITIES	71
B44 SUPERVISE ENGINEERING ASSISTANT SPECIALISTS (AFSC 55350)	68
B46 SUPERVISE ENGINEERING ASSISTANT TECHNICIANS (AFSC 55370)	62
C67 INDORSE APRs	62
C57 EVALUATE INDIVIDUALS FOR PROMOTION, DEMOTION, OR RECLASSIFICATION	62
A4 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	62
D76 CONDUCT OJT	56

TABLE VIC  
CONSTRUCTION CONTRACT LIAISON PERSONNEL  
(GRP078)

TASKS	PERCENT MEMBERS PERFORMING (N=6)
B47 WRITE CORRESPONDENCE	100
H257 PERFORM SURVEILLANCE OF PROJECTS PERFORMED BY OTHER GOVERNMENT AGENCIES	83
H227 COORDINATE CONSTRUCTION WITH USING AGENCY	83
H220 CONDUCT ACCEPTANCE INSPECTIONS	83
H223 CONDUCT PRE-FINAL INSPECTIONS	83
H222 CONDUCT POST-ACCEPTANCE INSPECTIONS	83
C55 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR CONSTRUCTIBILITY	83
G211 READ AND INTERPRET BLUEPRINTS	67
H253 PERFORM BENEFICIAL OCCUPANCY DATE (BOD) INSPECTIONS	67
H259 PREPARE PRE-FINAL PUNCH LISTS	67
H229 COORDINATE USE OF GOVERNMENT-FURNISHED EQUIPMENT (GFE)	67
E131 MAKE ENTRIES ON DD FORMS 1391 (MILITARY CONSTRUCTION PROJECT DATA)	67
H244 IDENTIFY ON-SITE AND DESIGN DEFICIENCIES	67
B40 INTERPRET ENGINEERING PLANS FOR SUBORDINATES	67
H228 COORDINATE ON-SITE VISITS OF OFFICIAL VISITORS	67
H232 DOCUMENT CONSTRUCTION ACTIVITIES	67
H230 COORDINATE USE OF GOVERNMENT-FURNISHED MATERIAL (GFM)	67
C54 EVALUATE DRAWINGS OR ENGINEERING PLANS FOR ACCURACY	67
E130 MAKE ENTRIES ON DD FORMS 1354 (TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY)	67
E124 MAKE ENTRIES ON AF FORMS 332 (BCE WORK REQUEST)	67
A15 PLAN OR PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	67
A4 DETERMINE REQUIREMENTS FOR SPACE, PERSONNEL, EQUIPMENT, OR SUPPLIES	67
H224 COORDINATE CONSTRUCTION PERMITS WITH BASE AGENCIES, SUCH AS, SECURITY POLICE OR GROUND SAFETY	50
H243 IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	50
H221 CONDUCT ON-SITE VISITS OF OFFICIAL VISITORS	50
H216 ANALYZE PROVISIONS OF CONSTRUCTION CONTRACTS	50
H252 PARTICIPATE IN PRE-PERFORMANCE CONFERENCES	50
C62 EVALUATE PROJECT SPECIFICATIONS	50
A13 PLAN LAYOUT OF FACILITIES	50
C58 EVALUATE INSPECTION REPORTS OR PROCEDURES	50
G196 LETTER DRAWINGS USING GOTHIC-ARCHITECT STYLE FREE HAND	50
H258 PREPARE BRIEFINGS ON CONTRACT STATUS	50
A14 PLAN OR PREPARE BRIEFINGS	50

TABLE VID  
SERVICE CONTRACT INSPECTORS  
(GRP074)

TASKS	PERCENT MEMBERS PERFORMING (N=23)
H234 DOCUMENT SERVICE CONTRACT ACTIVITIES	96
H254 PERFORM QUALITY ASSURANCE EVALUATIONS (QAE)	91
H243 IDENTIFY CONTRACTOR PERFORMANCE DISCREPANCIES	91
E105 MAINTAIN DAILY INSPECTION RECORDS	78
H217 ANALYZE PROVISIONS OF SERVICE CONTRACTS	78
H245 MAINTAIN RECORDS OF CONTRACT CHANGES	70
L329 FIRE M-16 RIFLES	70
B47 WRITE CORRESPONDENCE	65
A9 ESCORT PROSPECTIVE CONTRACTORS	57
H252 PARTICIPATE IN PRE-PERFORMANCE CONFERENCES	57
L236 DON CHEMICAL WARFARE PERSONAL PROTECTIVE CLOTHING	57
H220 CONDUCT ACCEPTANCE INSPECTIONS	52
E135 PREPARE CONTRACT FOLDERS	48
A19 PREPARE CHANGE ORDERS ON AWARDED CONTRACTS	39
H264 WRITE SERVICE CONTRACT SPECIFICATIONS	30
L360 PREPARE PERSONAL CLOTHING AND EQUIPMENT FOR DEPLOYMENT	30
L331 IDENTIFY CHEMICAL WARFARE AGENTS	30
C53 EVALUATE COMPLIANCE WITH WORK STANDARDS	26
E104 MAINTAIN ADMINISTRATIVE FILES	26
L330 IDENTIFY AND REPORT SUSPECTED ORDNANCE	26
L324 ASSEMBLE AM-2 MATTING FOR RAPID RUNWAY REPAIRS	26
L328 ERECT TENTS	26
H247 MAKE ENTRIES ON AF FORMS 1477 (CONSTRUCTION INSPECTION RECORD)	22
C62 EVALUATE PROJECT SPECIFICATIONS	22
H230 COORDINATE USE OF GOVERNMENT-FURNISHED MATERIAL (GFM)	22
L359 PRACTICE SELF-PROTECTION FROM EXTREME WEATHER	22
H223 CONDUCT PRE-FINAL INSPECTIONS	22
A14 PLAN OR PREPARE BRIEFINGS	22
L334 LAY AM-2 MATTING FOR RUNWAY OR AIRCRAFT PARKING	22
L354 PERFORM FIRST-AID LIFESAVING TECHNIQUES	22

TABLE VII  
MATERIALS TESTING TECHNICIANS  
(GRP102)

TASKS	PERCENT MEMBERS PERFORMING (N=12)
I266 ANALYZE SOILS FOR GRAIN-SIZE DISTRIBUTION	100
I267 ANALYZE SOILS FOR MOISTURE CONTENT	100
I275 TEST AGGREGATE FOR GRADATION	100
I270 CLASSIFY SOILS USING UNIFIED SOIL CLASSIFICATION SYSTEM	100
I265 ANALYZE SOILS FOR ATTERBURG LIMITS	100
I295 TEST SOILS USING LABORATORY CBR	92
I268 ANALYZE SOILS FOR SPECIFIC GRAVITY	92
I271 COLLECT SOIL SAMPLES	92
I293 TEST SOILS FOR MOISTURE-DENSITY RELATIONSHIP	92
I294 TEST SOILS USING FIELD CALIFORNIA BEARING RATIO (CBR)	92
I269 CLASSIFY SOILS FOR BEHAVIOR	83
I290 TEST CONCRETE FOR FLEXURAL STRENGTH	83
I296 TEST SOILS USING PLATE BEARING TEST	83
I281 TEST BITUMINOUS MATERIALS FOR ASPHALT CONTENT	75
I289 TEST CONCRETE FOR COMPRESSIVE STRENGTH	75
I283 TEST BITUMINOUS MATERIALS FOR MARSHALL STABILITY AND FLOW	75
I284 TEST BITUMINOUS MATERIALS FOR PENETRATION	75
I286 TEST BITUMINOUS MATERIALS FOR SPECIFIC GRAVITY	75
I291 TEST CONCRETE FOR SLUMP	75
I274 PREPARE MATERIALS TEST REPORTS	67
I292 TEST SOILS FOR IN-PLACE DENSITY	67
I276 TEST AGGREGATE FOR ORGANIC IMPURITIES	67
I280 TEST AGGREGATE FOR UNIT WEIGHT	58
I288 TEST AGGREGATE FOR AIR CONTENT	58
I279 TEST AGGREGATE FOR SURFACE MOISTURE	58
I287 TEST BITUMINOUS MATERIALS FOR VISCOSITY	58
I282 TEST BITUMINOUS MATERIALS FOR FLASH POINT	58
E101 INVENTORY EQUIPMENT, TOOLS, OR SUPPLIES	42
I277 TEST AGGREGATE FOR SOUNDNESS	42
B47 WRITE CORRESPONDENCE	42
A7 DEVELOP WORK METHODS OR PROCEDURES	42
B28 COUNSEL PERSONNEL ON PERSONAL OR MILITARY-RELATED PROBLEMS	42
I273 DESIGN TRIAL CONCRETE MIXES	33



**APPENDIX B**  
**FIRST-ENLISTMENT PERSONNEL**  
**TRAINING ANALYSIS DATA TABLES**

TABLE B1

APPROXIMATE TIME SPENT PERFORMING SURVEYS BY FIRST-ENLISTMENT PERSONNEL  
(PERCENT MEMBERS PERFORMING)\*

TYPE SURVEYS	TOTALS	VERY SMALL AMOUNT	MUCH BELOW AVERAGE	BELOW AVERAGE	SLIGHTLY BELOW AVERAGE	ABOUT AVERAGE	SLIGHTLY ABOVE AVERAGE	ABOVE AVERAGE	MUCH ABOVE AVERAGE	VERY LARGE AMOUNT
ARTILLERY SURVEYS	11	10	**	0	0	**	0	0	0	0
ASTRONOMIC SURVEYS	10	9	**	**	**	**	**	0	0	0
BASIC CONTROL SURVEYS	48	16	3	10	5	9	**	3	1	**
CONSTRUCTION SURVEYS	64	16	7	11	8	13	2	6	**	1
ENGINEERING SURVEYS	59	16	5	9	7	14	3	5	1	**
GRAVITY SURVEYS	11	10	**	**	0	**	0	0	0	0
HYDROGRAPHIC SURVEYS	11	10	**	**	0	0	**	**	0	0
LAND SURVEYS	46	12	3	9	4	9	3	3	1	**
TOPOGRAPHIC SURVEYS	70	14	8	10	8	13	4	6	3	3
UNDERGROUND SURVEYS	15	11	1	**	**	**	**	**	0	0

\* TOTALS WILL NOT EQUAL 100 PERCENT DUE TO NONRESPONSES OR ROUNDING (N=385)

\*\* DENOTES LESS THAN ONE PERCENT

TABLE B2

APPROXIMATE TIME SPENT PERFORMING SURVEYING ACCURACIES  
(FIRST-ENLISTMENT PERSONNEL)  
(PERCENT MEMBERS RESPONDING)\*

APPROXIMATE TIME SPENT	SURVEYING ACCURACY			
	FIRST ORDER	SECOND ORDER	THIRD ORDER	LOWER ORDER
VERY SMALL AMOUNT	9	6	14	10
MUCH BELOW AVERAGE	2	2	3	4
BELOW AVERAGE	2	4	6	7
SLIGHTLY BELOW AVERAGE	**	3	4	4
ABOUT AVERAGE	**	4	17	13
SLIGHTLY ABOVE AVERAGE	**	**	5	3
ABOVE AVERAGE	0	**	5	7
MUCH ABOVE AVERAGE	0	**	3	3
VERY LARGE AMOUNT	0	**	6	3
TOTAL MEMBERS RESPONDING	15	21	63	52

\* TOTALS WILL NOT EQUAL 100 PERCENT DUE TO NONRESPONSES OR ROUNDING (N=385)

\*\* DENOTES LESS THAN ONE PERCENT

TABLE B3

APPROXIMATE TIME SPENT DRAFTING DIFFERENT PLANS  
(FIRST-ENLISTMENT PERSONNEL)  
(PERCENT MEMBERS RESPONDING)\*

APPROXIMATE TIME SPENT	ARCHITECTURAL PLANS	CIVIL ENGINEERING PLANS	ELECTRICAL ENGINEERING PLANS	MECHANICAL ENGINEERING PLANS
VERY SMALL AMOUNT	7	7	8	9
MUCH BELOW AVERAGE	2	3	4	4
BELOW AVERAGE	5	8	9	6
SLIGHTLY BELOW AVERAGE	5	8	9	6
ABOUT AVERAGE	22	23	23	21
SLIGHTLY ABOVE AVERAGE	8	6	7	7
ABOVE AVERAGE	12	10	6	8
MUCH ABOVE AVERAGE	7	6	4	5
VERY LARGE AMOUNT	9	5	4	5
TOTAL MEMBERS RESPONDING	77	76	72	72

\* TOTALS WILL NOT EQUAL 100 PERCENT DUE TO NONRESPONSES OR ROUNDING (N=385)

TABLE B4

APPROXIMATE TIME SPENT DRAFTING DIFFERENT ARCHITECTURAL PLANS  
(FIRST-ENLISTMENT PERSONNEL)  
(PERCENT MEMBERS RESPONDING)\*

TYPE OF ARCHITECTURAL PLAN	TOTALS	VERY SMALL AMOUNT	MUCH BELOW AVERAGE	BELOW AVERAGE	SLIGHTLY BELOW AVERAGE	ABOUT AVERAGE	SLIGHTLY ABOVE AVERAGE	ABOVE AVERAGE	MUCH ABOVE AVERAGE	VERY LARGE AMOUNT
AIR CONDITIONING AND VENTILATING PLANS	62	11	7	11	8	14	3	6	1	1
ELEVATIONS	72	8	6	11	9	19	9	7	3	2
FLOOR PLANS	79	4	2	6	7	18	11	14	7	9
FOUNDATION PLANS	65	11	7	11	10	14	4	5	2	1
FRAMING PLANS	58	14	7	11	12	8	2	3	1	1
PAVEMENT PLANS	57	15	7	8	8	9	3	5	1	1
PLOT PLANS	65	10	5	9	8	17	4	6	4	3
PLUMBING PLANS	62	8	7	10	7	17	5	5	2	2
STRUCTURAL CONCRETE PLANS	51	12	6	10	7	8	3	3	2	1
STRUCTURAL STEEL PLANS	45	14	4	10	7	5	1	2	1	1
STRUCTURAL TIMBER PLANS	43	16	4	6	6	5	2	2	1	1
WIRING PLANS	64	11	6	9	8	16	6	5	3	2

\* TOTALS WILL NOT EQUAL 100 PERCENT DUE TO NONRESPONSES OR ROUNDING (N=385)

TABLE B5

APPROXIMATE TIME SPENT USING MATHEMATICAL TABLES  
 (FIRST-ENLISTMENT PERSONNEL)  
 (PERCENT MEMBERS RESPONDING)\*

<u>APPROXIMATE TIME SPENT</u>	<u>LOG TABLES</u>	<u>TRIGONOMETRY TABLES</u>	<u>SPIRAL CURVE TABLES</u>	<u>EPHEMERIS TABLES</u>
VERY SMALL AMOUNT	10	12	11	12
MUCH BELOW AVERAGE	5	7	1	**
BELOW AVERAGE	4	8	2	2
SLIGHTLY BELOW AVERAGE	1	6	1	0
ABOUT AVERAGE	1	9	**	**
SLIGHTLY ABOVE AVERAGE	1	3	0	0
ABOVE AVERAGE	**	3	**	**
MUCH ABOVE AVERAGE	0	1	0	**
VERY LARGE AMOUNT	**	**	0	0
TOTAL MEMBERS RESPONDING	23	49	16	15

\* TOTALS WILL NOT EQUAL 100 PERCENT DUE TO NONRESPONSES OR ROUNDING (N=385)  
 \*\* DENOTES LESS THAN ONE PERCENT

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